

# Researchers' Use of Academic Libraries and their Services

A report commissioned by the Research Information Network and the Consortium of Research Libraries

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## 1 Foreword

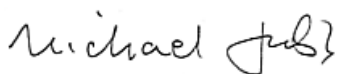
Academic libraries have for centuries played critically-important roles in supporting research in all subjects and disciplines within their host universities and colleges. But the last decade has brought a sea-change in relationships between researchers and libraries. Technological developments and the availability of information resources online have changed how research is done, and also the services that academic libraries provide to their research communities. Both researchers and librarians have welcomed the benefits these changes have brought, adapting rapidly to them and seeking to exploit their potential to the full. And they both look forward to further change in the coming years.

With new technological developments and innovations come new challenges and new expectations. In commissioning this study, the RIN and CURL have sought to establish a solid base of evidence on how libraries have been developing their services and strategies, and how researchers have been making use of those services. But we have also sought to look forward, to gain a perspective from both researchers and librarians as to how they envisage library services developing in the future.

We commissioned Key Perspectives Ltd to undertake the study, and we are most grateful to them for what they have done. It has involved major surveys of researchers and of librarians, and an intensive series of focus group discussions and interviews. We are grateful also to all those who have advised us about the study, and to those who responded to the surveys and participated in the discussions.

The result is an authoritative account of the current state of relationships between researchers, academic libraries, and the services those libraries provide; and of perspectives on how they might develop for the future. The evidence base is now in place.

The key task now is to consider all the lessons and implications that can be drawn from it. The report provides important hints, in highlighting, for instance, the importance of better communications and dialogue between libraries and researchers. But there is much more to be done. We shall be working with our key stakeholders to build on this study to develop policy and strategic advice to libraries and information services, their host universities and colleges, and funding bodies on how best to support and develop library services in the coming years. Researchers rely on effective information services, more than they often realise. Ensuring that libraries provide the services that researchers need, and that researchers can make the most effective use of those services, are critically-important priorities.



**Michael Jubb**  
*Director, RIN*



**Robin Green**  
*Executive Director, CURL*

During the course of this study we surveyed or spoke to thousands of researchers and hundreds of librarians, library school educators and information specialists. We promised anonymity but they know who they are and we thank them most sincerely for their time and input. We hope we have accurately reflected the opinions and advice given to us but any conclusions that have been drawn are ours alone and we take responsibility for them.

**Sheridan Brown and Alma Swan**  
*Key Perspectives Ltd*

## 2 Executive Summary

This study was designed to provide an up-to-date and forward-looking view of how researchers interact with academic libraries in the UK. Harnessing empirical data and qualitative insights from over 2250 researchers and 300 librarians, the sponsors of the survey hope that the results will be useful in informing the debate about the future development of academic libraries and the services they provide to researchers.

This is an important moment in the relationship between researchers and research libraries in the UK. The foundations of the relationship are beginning to be tested by shifts in the way that researchers work. The rise of e-research, interdisciplinary work, cross-institution collaborations, and the expectation of massive increases in the quantity of research output in digital form all pose new challenges. These challenges are about how libraries should serve the needs of researchers as users of information sources of many different kinds, but also about how to deal with the information outputs that researchers are creating.

Currently, the majority of researchers think that their institutions' libraries are doing an effective job in providing the information they need to do their work, but it is time to consider the future roles and responsibilities of all those involved in the research cycle – researchers, research institutions and national bodies, as well as libraries – in meeting the challenges that are coming.

### **Pressure points**

The majority of researchers in all disciplines have adapted readily to the widespread availability of digital content, accessible directly from their desktops. Researchers are eager for more digital content and libraries are eager to provide it. But while nearly all researchers think funding the library should be a high or top priority for their institution, librarians indicate that it is not always easy to secure top-level support. Hence academic libraries receive a relatively modest proportion of their institutions' budgets and cannot deliver all they would wish to. Limited funding emphasises the tension between competing demands for library resources: many researchers perceive that libraries give greater priority to support for teaching and learning rather than to research, something that many librarians acknowledge.

### **A sense of place**

There has been a sharp fall over the past five years in the number of researchers who visit their institution's library regularly. This is most pronounced in the sciences, but in all disciplines there is clear evidence of declining attendance. Researchers are choosing to access digital information from their desktops, primarily from their office but also from their homes. Only in the arts and humanities do a significant majority of researchers put a high value on the services provided in library buildings. And while just over a third of arts and humanities researchers visit libraries other than their own on a regular basis, a much smaller number of social science and science researchers do so. More must be done to facilitate the use of other libraries' offerings and to promote the use of reciprocal access schemes for both printed and digital content.

### **Researcher behaviour**

Most researchers use digital finding aids to locate both digital and print-based resources. Print finding aids are used by very few researchers, and these are mainly in the arts and humanities. This highlights the need for libraries to ensure that they provide online high-quality metadata for their holdings, and that they address cataloguing backlogs. Information resources that cannot be found electronically may well be overlooked, since few researchers will invest the time required to track down items that cannot be quickly be identified using digital finding aids. Once they have identified the information they

require, most researchers, particularly in the sciences, will not spend long trying to obtain it. For items not available digitally and immediately, many researchers use inter-library loan, though its use is declining as researchers adopt a variety of pragmatic and informal approaches – by-passing the library - to overcome barriers to access.

### **New ways of working**

As users of digital information, researchers place a very high value on electronic journals, but a much lower value as yet on libraries' provision of other kinds of digital resources. Increases in the scale of research, and the growth of collaborative and inter-disciplinary research teams, present challenges to libraries in seeking to provide effective services and equitable access to the members of such teams. And growth in the volume and scale of research, along with the development of e-research and virtual research communities, is also leading to rapid growth in the volume of digital research outputs in many different forms; these are likely to create new challenges for librarians in data management, storage and preservation. There is an urgent need for librarians and the research community to work together to clarify the roles and responsibilities of key players – at national as well as institutional level - in managing these outputs.

### **New ways of providing**

A significant part of the study focuses on the roles librarians play in support of the research process, and the related expectations of researchers. Both groups expect that libraries will have a key role as custodians and managers of digital resources. Librarians believe their current role of providing expert advice and teaching on information literacy will continue to be important in the future but, while many researchers agree with this, libraries will need to ensure that effort is put into securing significant take-up of their expertise and advice by the research community. There are some significant differences between researchers' and librarians' views as to the future role of libraries in supporting research, and there is a need for dialogue between them to ensure that library services and expertise are developed and deployed in the most effective way.

Multi-institutional developments such as Virtual Research Environments will continue to grow: libraries could win important roles here, but these new developments will generate new demands in terms of resourcing, equipping people with appropriate skill sets and managing the process of inter-institutional cooperation.

### **Visibility, sharing, openness**

Libraries have made significant efforts to optimise the visibility and usage of their archival or special collection material through digitisation programmes. Feedback from researchers is very positive, but many information resources that could be useful to researchers remain under-used currently, mainly because they exist only in hardcopy or are inadequately catalogued. Researchers' awareness of new developments in scholarly communications, particularly issues to do with open access to research outputs, is low. Further progress in realising the potential of open access to optimise access to research outputs will require effective interaction between researchers, libraries and senior management at institutional and national level.

### **Library-research community relations and the future promotion of library services**

For librarians, liaison with the research community presents a number of problems, arising from the transience of many of the individual relationships that can be formed, the increasing tendency for researchers to use library services remotely, and researcher independence. There are significant differences between researchers and librarians in attitudes, perceptions and awareness of key issues. Many believe that communication channels need to be improved but achieving this is not easy. There is a danger that the role of libraries may be diluted as researchers, particularly younger ones, turn to the

social networking space to share research-based information. This potential divergence of paths is not inevitable; but libraries need to proclaim their value so that researchers properly understand and acknowledge what the library is bringing to their working lives, and most particularly to their desktops. At present, many do not, perceiving only that these resources are delivered by the institution in some general guise. The successful research library of the future needs to forge a stronger brand identity within the institution.



## 3 Overview and Introduction

### 3.1 Overview

This study of researchers' use of library services to support their research is far-reaching, and presents a quantitative as well as qualitative account of the current position and of likely trends for the future. It needs to be set in the context of existing knowledge about what libraries do and about researcher behaviour with respect to libraries, the topics of many studies over the last two decades. Researcher behaviour and library developments exert reciprocal influences and pressures on each other. Libraries and the research community follow a leap-frog path of mutually-supportive advancement, sometimes with changes in researcher needs outpacing the library's ability to provide, sometimes with the library's proactive embracing of change (in technology, say) waiting for researchers to catch up.

A number of major themes arise in this study, amongst them the availability of digital information, collection building and usage, collaboration, discovery and the discovery-access gap, metadata and catalogues, and the growth of informal scholarly communications. In this scene-setting section of the report we introduce these, since they represent clear foci of attention for both researchers and librarians.

#### 3.1.1 Digital Information

We start with technology and the increasing availability of digital information. Numerous studies (see, for example, <sup>1,2</sup>) have reported that the electronic availability of journals and other periodic literature, and to a growing extent books, has been a prime factor in the decreasing number of personal visits to research libraries, and the increasing amount of information-seeking and retrieval carried out at researchers' desks, either at work or at home. Indeed, such is the convenience of remote access at any time of the day or night that the notion has spilled over into areas outside the direct accessing of journals and books.

Online journal usage began in the sciences and whilst in the early 1990s technical problems in accessing and retrieving information were quite common<sup>3</sup> such problems are now rare. Now, almost all researchers report that they use online journals, though in the arts and humanities the level of provision of online journals still lags behind the sciences. Nonetheless, the number of e-journals in the arts and humanities increases year on year and is welcomed by the community. This trend will continue and the future is assuredly digital. This goes for monographs, too, though the market for e-books has been slow to develop in the UK. That said, librarians told us that they are increasingly looking to spend money in this area and recent figures show that spending on e-books has now reached 11% of the print book budget and is predicted to rise to 20% by 2011<sup>4</sup>.

#### 3.1.2 Digital Collections

Building electronic collections is thus a major issue for libraries and with this comes the question of how best to do it. Obviously, utility to the research community is one major factor guiding the choice of

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<sup>1</sup> Friedlander, A (2002) Dimensions and use of the scholarly information environment: a data set assembled by the Digital library Federation and Outsell, Inc. Council on Library and Information Resources. [www.diglib.org/pubs/dlf098/](http://www.diglib.org/pubs/dlf098/)

<sup>2</sup> Research Support Libraries Group (2003): Final Report (survey of researchers). [www.rslg.ac.uk/final/final.pdf](http://www.rslg.ac.uk/final/final.pdf)

<sup>3</sup> Hallmark, J (1994) Scientists' access and retrieval of references cited in their recent journal articles. *College and Research Libraries* 55 (3), 199-201.

<sup>4</sup> Primary Research Group Inc (2006) The Survey of Academic Libraries. ISBN 157440-080-0 [www.primaryresearch.com](http://www.primaryresearch.com). Use of e-books in the HE sector is likely to be stimulated further by an "e-book observatory" project being funded over the next two years by JISC. See <http://www.jiscebooksproject.org/>.

journals or journal packages to purchase, but it is not easy to measure this satisfactorily. Usage log analysis can tell part of the story of how particular journals or systems are used, but not about how users actually utilise the information. Do they read what they download? Do they cite it? Which articles provide the critical insights or pointers for their work, and which are filed away on their computer (or, printed out, in their filing cabinet) never to be looked at again? Surveys and observations may tell a fuller story, but still not the whole. So librarians must try to put together data from multiple sources<sup>5</sup> to make judgments on how useful electronic objects are and what place they have within their overall collections. The view has been clouded, too, by the move to big deals in recent years. Conceived as a win-win-win solution to the serials crisis (a positive outcome for publishers, libraries and users), the big deal model found great favour in many quarters but not in others. More recently, some libraries or consortia have sought to cancel their deals or negotiate new terms. Nevertheless, the library consortia which negotiated big deals have better purchasing power and have developed a better understanding of their users' needs as result of working collaboratively and rigorously in a quest to improve collections development.

### 3.1.3 Collaboration

Such collaborative work will continue: it has proved to be effective. Local collaborative acquisition, and reciprocal document delivery or borrowing schemes can be an answer to some of the problems associated with collections development. The CORSALL project in the East Midlands provides an informative example of what can be done, as well as where the hitches may be found<sup>6</sup> and a broader-ranging report on resource sharing was produced by CHEMS in 2002<sup>7</sup>. It is not all plain-sailing, and commitment to collaborative ventures can have detrimental repercussions; for example, when research in a particular area ceases in one institution, the library must continue to pay for its share of the deal, despite the local need no longer existing.

### 3.1.4 Discovery and Access

The digital environment has radically changed the way researchers find articles, as well as how they access and retrieve them. To do this, researchers must master an array of finding tools that themselves form part of the complexity of materials and services incorporated in modern digital libraries that have been described as *a cascade of interactions at the interface*<sup>8</sup>. Librarians and users must make sense of this cascade, and librarians must be the guides of users in this respect. Skills training is a big issue, and we report on how UK librarians and researchers view this matter: in general it is clear that libraries offer such training as a matter of course and that many researchers avail themselves of it. Our findings can be compared with those reported in the study published by the Research Information Network in November 2006 on researchers' use of resource discovery services<sup>9</sup>. This found a lack of formal training in using discovery services; and while this was not seen as a problem by the research community, librarians viewed researchers as highly conservative in the range of tools they use.

Our discussions with both parties – librarians and researchers – tended to confirm this: researchers *do* use a limited range of discovery tools, partly because they become familiar with their scope and thus trust the outcome, and partly because they are unadventurous when they think the tools they habitually use produce an acceptable result. And researchers seem to be becoming more limited in the range of

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<sup>5</sup> Tenopir, C (2003) Use and users of electronic library resources: an overview and analysis of recent research studies. Council on Library and Information Resources. <http://www.clir.org/pubs/reports/pub120/contents.html>

<sup>6</sup> Bloor, I (2006). CORSALL: Collaboration in Research Support by academic libraries in Leicestershire: final report. <https://test2.blue.dmu.ac.uk/dspace/handle/2086/52>

<sup>7</sup> <http://www.rslp.ac.uk/circs/>

<sup>8</sup> Bates, M J (2002) The cascade of interactions in the digital library interface. *Information Processing and Management* **38**, 381-400

<sup>9</sup> Researchers and discovery services: behaviour, perceptions and needs. Research Information Network, November 2006 <http://www.rin.ac.uk/files/Report%20-%20final.pdf>

tools they use as Google becomes better at delivering a result they see as satisfactory. Van Orsdel and Born<sup>10</sup> report that Google has relentlessly 'strengthened its claim as the ubiquitous front door to the web and all of its content', including scholarly content. They found that Google is responsible for referring 56% of the users of HighWire journals, and our own study shows that over 70% of researchers use it routinely to find scholarly content<sup>11</sup>. Moreover, web search engine referrals also appear to account for the vast majority of accesses to institutional repositories<sup>12</sup>.

Does this matter, and if so what are the implications for the future? One of them is that researchers are becoming more displaced from the library with respect to information finding, access and retrieval. Mostafa paints a tantalising picture of a future where web search engines will be able to locate all manner of content via personalised services delivered to mobile devices of users on the move<sup>13</sup>. This does not seem fanciful, but it does pose some questions as to how libraries will be able to weave such developments into their own services and *modus operandi* in the future.

As researchers make more use of online discovery tools, they also increasingly encounter the gap between finding and gaining access to the resources relevant to their work. One of the implications of Google (and web search engines in general, though in practice Google is the one most commonly used) already being experienced by libraries is that Google uncovers things that users cannot easily access, and librarians are increasingly asked to help in retrieving the object from webspace. This is not usually easy, takes time and is resource-intensive. It may be an interesting challenge for librarians, and perhaps even welcome so long as the volume of requests is manageable; but the future will bring more and more of this. The last decade has brought plenty enough frustration to both librarians and researchers when journal articles that are located are found to sit behind a subscription barrier. This was highlighted in the RIN study on discovery services<sup>9</sup>: *The main frustration is not with research discovery services themselves but with the problem of subsequently accessing identified sources and materials. The 'last mile' of the process which actually delivers the document or other source that has been searched for is the focus of concern, with lack of access to journal articles because of a subscription barrier being the most frequently-expressed difficulty experienced.*

### 3.1.5 Metadata and Catalogues

Notwithstanding their frustrations, journal articles are relatively simple to find – even if not always to access. Other items may not be so easily located because their metadata is poor in quality, or non-existent in digital form. Without good, fully-descriptive metadata online, an item will be unnoticed by all but the most persistent and curious. Librarians acknowledge the importance of assigning adequate metadata to all the items in their holdings, and the scale of the task they face. It is resource-intensive and requires highly-trained and experienced cataloguers. Libraries are doing what they can but their current resources often do not go far enough to do more than nibble away at the edges. There are a number of project-level initiatives in this area and they are producing, and will no doubt produce more, outstanding recommendations and protocols; but many libraries need further practical help in dealing with cataloguing backlogs and struggle with the demands – and the opportunities – of ensuring that all their digital and print holdings are adequately catalogued.

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<sup>10</sup> Van Orsdel L C and Born K (2006) Journals in the time of Google. *LibraryJournal.com*, April 15, 2006. <http://www.libraryjournal.com/article/CA6321722.html>

<sup>11</sup> Swan, A and Brown S (2005) Open Access self-archiving: an author study. <http://eprints.ecs.soton.ac.uk/10999/>

<sup>12</sup> Carr, L (2006) Use of navigational tools in a repository. Posting to American Scientist Open Access Forum, March 9, 2006 <http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/5170.html>

<sup>13</sup> Mostafa, J (2005) Seeking better web searches. *Scientific American* **292** (2), February 2005, 66-73

The role of library catalogues is being discussed energetically in some library circles. In this report we present findings on how useful researchers find their library catalogue and on its place in their current armoury. But the current distinctive role of the catalogue may not last. Dempsey urges us to consider the catalogue in the wider context of the whole gamut of discovery systems: alongside the catalogue he foresees *discovery systems for other collection types (the institutional repository, the digital asset repository, etc); the emergence of a general search/resolution layer within the library; external environments such as Google and Amazon, the RSS aggregator, or the course management system*<sup>14</sup>.

### 3.1.6 Informal Scholarly Communications

Libraries face new challenges as researchers' behaviour changes in response to new technological developments. This is especially pronounced in the new ways of communicating that have been described as *the democratisation of informal scholarly communication*<sup>15</sup>. Libraries will need to plan for and build services that fit new researcher work habits, with an emphasis on the flexibility and remixing of their content and services. The library offering will be through a network environment which is already bringing change in user behaviour. Indeed, this is one area where researchers are moving a little faster than the library at present. In this study we paid some attention to the new world of informal peer-to-peer communication within the research community. The findings are that researchers are adopting social networking technologies very fast and that so far they have done so on their own: the library has effectively been bypassed.

It is possible that this is how things will continue, though it seems more likely that concerns over the vulnerability of socially-created, valuable information will send researchers into the arms of those they trust – on curation and preservation issues, at the very least. Not all wikis and blogs are thought of as ephemeral, after all. Moreover, departmental server provision, enough to keep up so far with the amount of information deemed desirable to hold onto, may also be swiftly outgrown by the inexorable rise in the volumes of data generated and accumulated by researchers. In the networked environment the needs of the research community may thus bring about a new coalescence with the wired library. Dempsey<sup>16</sup> argues that a fundamental of the new library world is *attention*: “.....*some things you just had to go to the library for. In the current Web environment this is no longer the case. There are many demands on attention and many resources are available .... we see a growing discussion of how to engage with user environments and workflows.*” Nothing ever stands still, but the pace of change of user behaviour in the networked world is fast and getting faster. Planning for the provision of services that match researcher requirements will get tougher, but the key would appear to be to build systems that can synthesise, that are flexible and that are adaptable. Murray put this succinctly: *the business and service model [of libraries] is evolving from acquiring, cataloguing and circulating physical collections to synthesising, specialising and mobilising Web-based services*<sup>17</sup>. And inter-library collaborative ventures may become appropriate here, too, to remove redundancies, build capacities and iron out inefficiencies.

## 3.2 Introduction to the Study

In commissioning this study the RIN and CURL, with input from SCOUNL, aimed to capture an up-to-the-minute perspective on how researchers are using academic libraries in the UK, and will use them in the future. At the same time, we asked librarians to comment on the services they offer researchers at

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<sup>14</sup> Dempsey, L (2006) The library catalogue in the new discovery environment: some thoughts. *Ariadne*, **Issue 48**, July 2006

<sup>15</sup> Davies, J E and Greenwood, H (2004) Scholarly communication trends – voices from the vortex: a summary of specialist opinion. *Learned Publishing* **17** (2), 157-167. <http://www.ingentaconnect.com/content/alpsp/lp/2004/00000017/00000002/art00011>

<sup>16</sup> Dempsey, L (2006) The (digital) library environment: ten years after. *Ariadne* **46**, February 2006

<sup>17</sup> Murray, R (2006) Library systems: synthesise, specialise, mobilize. *Ariadne* **48**, July 2006

present, and on the forces precipitating change in those services. The study has been far-reaching, involving not only quantitative surveys of researchers and librarians, but also a significant qualitative consultation process which included the input of an expert panel, focus group discussions and telephone interviews. In total more than 2250 researchers and 300 librarians volunteered their views in detail.

The results provide a snapshot of researchers' and librarians' *attitudes* and *perceptions* in relation to the UK's academic libraries. It is a timely snapshot since there are forces which appear set to accelerate the pace of change, both in researchers' expectations and in libraries' ability to meet those expectations. Researchers like access to digital content, and through the use of new tools and new ways of working they are themselves producing new digital content. The rapid rise of e-science, interdisciplinary research and large scale international collaborations are set to increase the quantity and change the nature of research output dramatically, but it is not yet clear what role libraries will play in this brave new world. There are challenges ahead for libraries but also opportunities: at this point there is much to play for.

The body of the report presents a synthesis of the results from the quantitative and qualitative aspects of the study, structured in a way that makes the outcomes easily accessible to readers. The quantitative data from the survey of researchers is disaggregated in the main across four broad disciplinary groups of researchers: in the arts and humanities; the social sciences; the physical sciences; and the life sciences. This seems to be the most practical approach, and it reflects the findings of recent studies – such as the JISC report on disciplinary differences<sup>18</sup> - which highlight important differences between disciplinary groups in their information-related behaviour.

**Section 4** explores the role of digital information in increasing access to content but also driving libraries' policies; and the perception of the role of the library in the institution as a whole.

**Section 5** explores the role of the library as place, and the physical services it provides, as the number of researchers visiting the library building falls sharply.

**Section 6** explores researchers' use of print and digital finding aids and content as well as examining the pragmatic approaches they adopt to overcome barriers to accessing the information they seek.

**Section 7** looks at how researchers are beginning to work in new ways, and the implications for libraries as they seek to develop new roles in supporting research

**Section 8** builds on these themes and provides insights into the ways in which libraries might best provide for the future needs of researchers.

**Section 9** looks at scholarly communications, and libraries' roles in supporting new developments such as open access.

**Section 10** explores issues of communication both between researchers themselves and between researchers and librarians.

An outline of the methodology employed may be found at Appendix 1 together with a full set of statistical data summaries.

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<sup>18</sup> Rightscom Ltd (2005) JISC disciplinary differences report. JISC. [http://www.jisc.ac.uk/news/stories/2005/09/schol\\_comms\\_reports.aspx](http://www.jisc.ac.uk/news/stories/2005/09/schol_comms_reports.aspx)



## 4 Pressure Points

### 4.1 Introduction

Researchers are on the whole satisfied with the services their libraries provide. Our survey showed that nearly three-quarters of researchers believe that their institution's main library provides the information resources and services they need "very effectively" (24%) or "effectively" (48%). But the pace of technological change and the increasing availability of digital information impose pressures on libraries, and highlight the tension between what *could* be done in an ideal world and what *can* be done in practical terms. As expectations have changed, librarians face growing demands from researchers for better access to research information resources and tools. This chapter explores the key pressure points, including funding and the balance librarians must strike between the needs of research and those of teaching and learning.

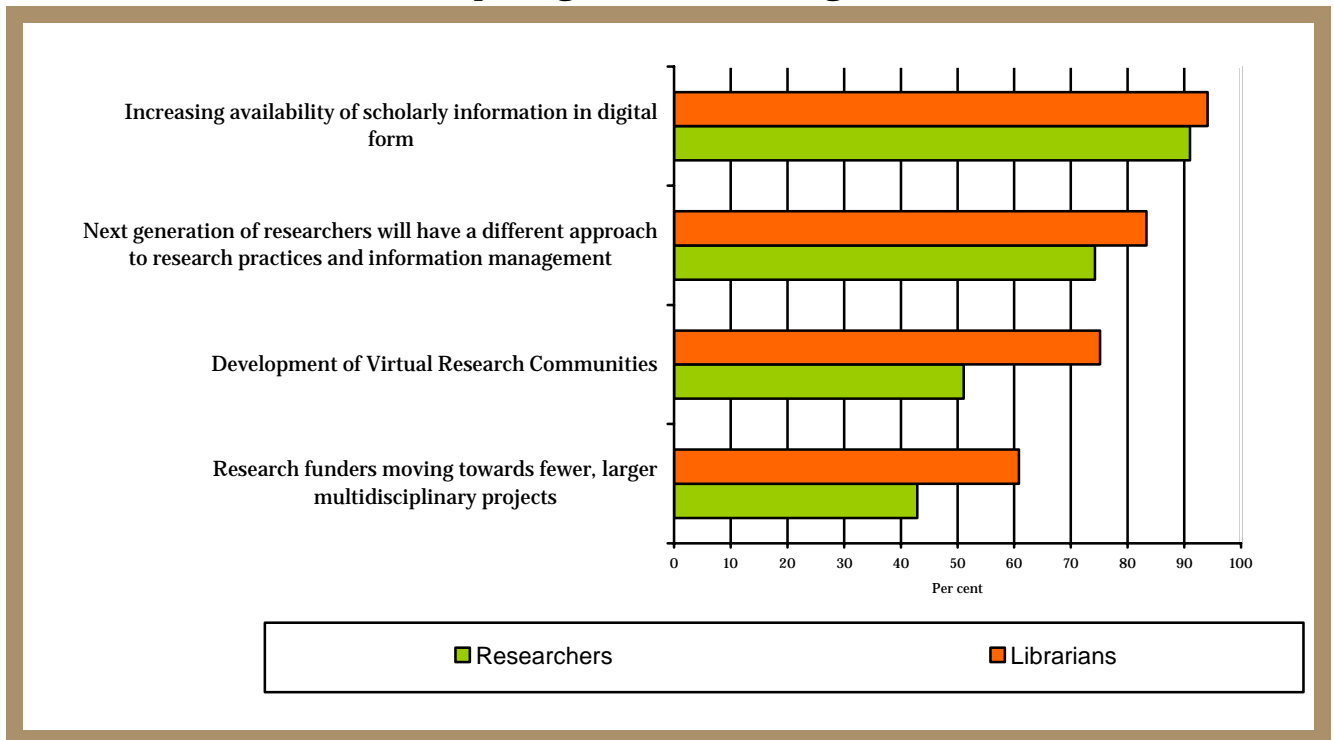
### 4.2 Drivers for new developments in library services

We noted in Section 3 some of the key factors that are causing researchers and librarians to re-evaluate the roles libraries play. In the surveys, we asked for their views on the relative importance of four key drivers: the increasing availability of scholarly information in digital form; changes in research practice; the growth of virtual research communities; and moves towards larger-scale research projects. As we show in Figure 1, researchers and librarians agree that the availability of digital information is the most important of these drivers: 91% of researchers believe this will be an "important" (24%) or "very important" (67%) factor in requiring libraries to change how they deliver services. Libraries themselves are also busy digitising information previously available only in hard copy. Researchers appreciate this hugely. It makes information resources easier to find, to access, and to utilise. We discuss this issue further in Section 9.2.

The way that researchers themselves work also affects the services they require. Many researchers believe that the next generation will have a different approach to research practices and information management; and three-quarters of respondents think this behavioural shift will be an "important" (30%) or "very important" (44%) factor in influencing how libraries will need to deliver services to researchers.

When the views of the librarians are compared with those of the researchers it is plain that both groups perceive the four drivers in the same rank order, but for the final two drivers the proportions are somewhat different. It is notable, however, that proportionately more librarians than researchers believe that the development of Virtual Research Communities and the trend for research funders to focus increasingly on fewer, larger multidisciplinary projects will have an important impact on the way libraries deliver services. The basis for this belief is not clear, and we discuss the impact of Virtual Research Environments and Virtual Research Communities further in Section 8.8.

**Figure 1: Researchers' and librarians' views on which factors are important in requiring libraries to change**



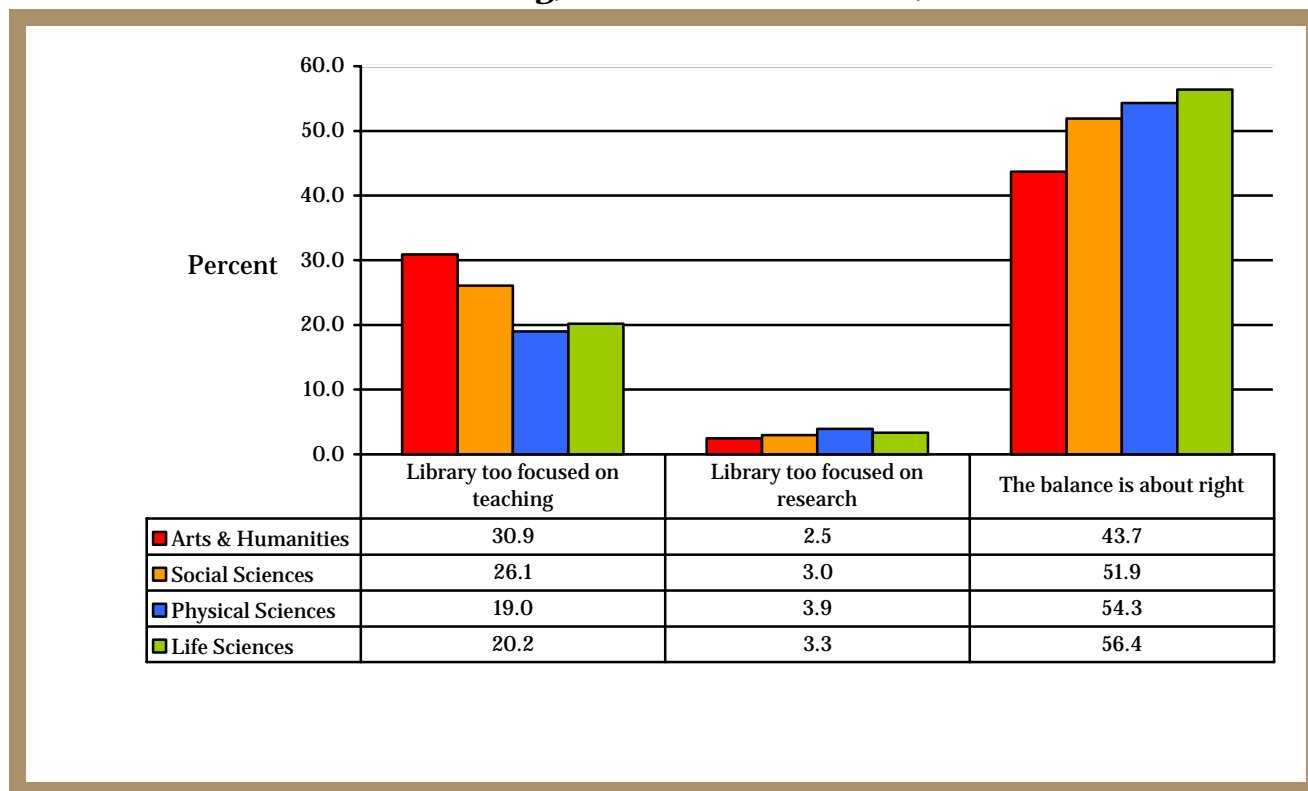
### 4.3 Support for teaching and research

Librarians need to balance their investments in information resources and services in a manner that reflects the sometimes competing needs of teaching and research. Our survey indicates that around half of the UK's researchers think librarians have got the balance about right. But as Figure 2 indicates, there is a clear sense that the needs of researchers are not sufficiently recognised in the configuration of information resources and services provided to them. Only small proportions of researchers think their library is too focused on providing resources and services for researchers. At the same time, 61% of researchers either "disagree" or "strongly disagree" that their library is too focused on providing for the needs of researchers. Taken together, these responses suggest significant levels of dissatisfaction and a perceived imbalance between serving the needs of teaching and research.

In our focus groups, researchers told us that the effects of a library's requirement to service teaching and learning needs can be detrimental to the provision of services underpinning research. In some cases, researchers have to purchase themselves books they need for research because their library cannot justify purchase through the library budget<sup>19</sup>. Sometimes, researchers make the case for the purchase of a research text with a disingenuous claim that it is for teaching purposes. Indeed, teaching itself may suffer from some libraries' relatively tight rules on purchasing research texts: it was pointed out that teaching degree-level courses is impossible without buying 'decent research texts', yet this aim is often difficult to achieve. This spills over into the use of inter-library loan, which is in some cases discouraged for research-based materials, with priority given to obtaining teaching-related articles.

<sup>19</sup> We distinguish here between this imperative and the longstanding culture in the arts and humanities of scholars developing their own private library

**Figure 2: Percentages of researchers who "strongly agree" or "agree" that their library is too focused on teaching, too focused on research, or in balance**

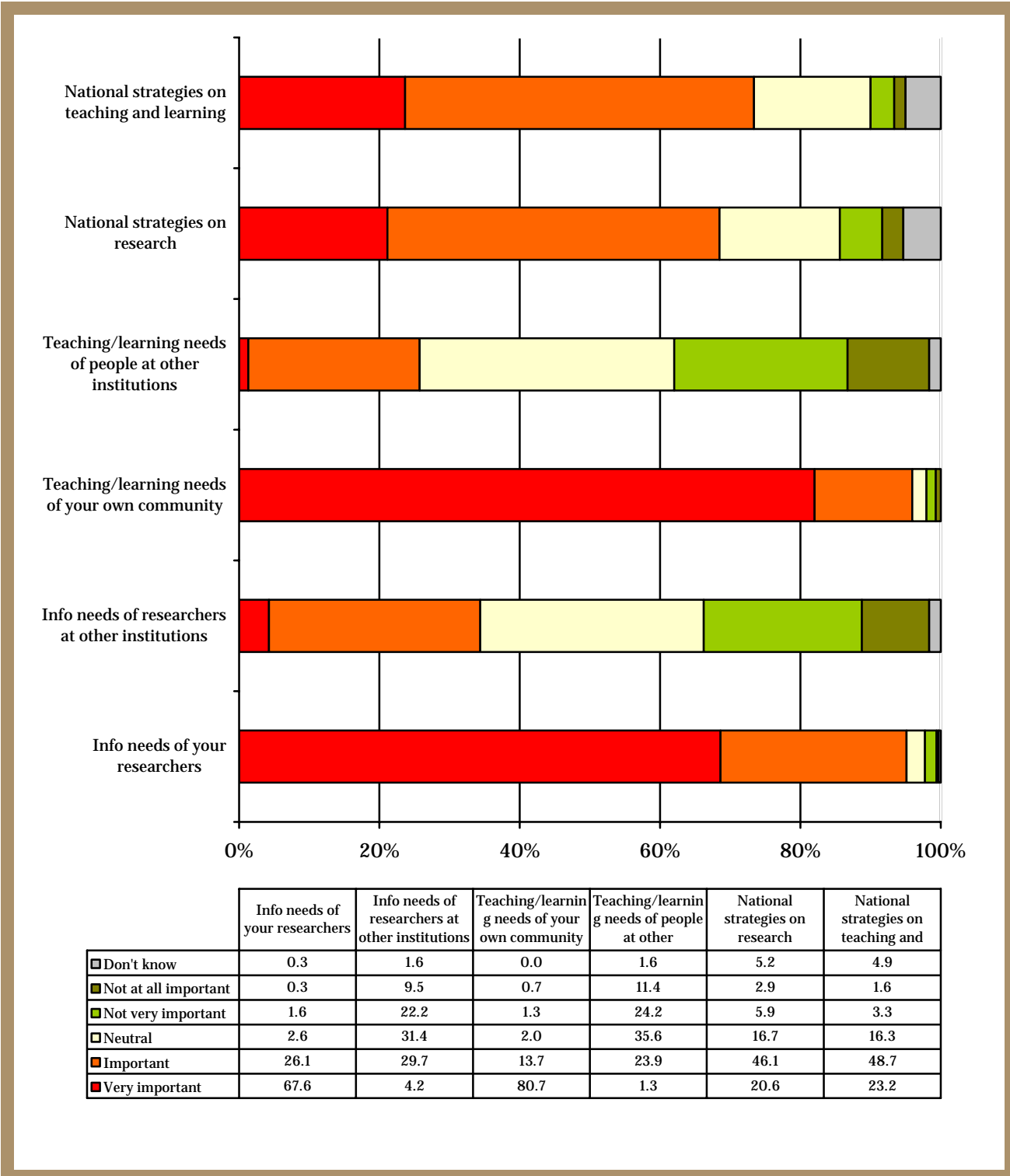


It is instructive to compare these findings with the views of librarians. They were asked to indicate the relative importance of teaching and research needs in relation to driving their library’s policy. Figure 3 shows that although librarians are concerned to provide resources and services for both teaching and research, it is the needs of teaching that tend to take priority: 81% of librarians think that the teaching and learning needs of people in their own institution are “very important” in driving library policy, compared with 68% who give the same rating to the information needs of their institution’s researchers. This provides some support for those researchers who perceive that their library is too focused on teaching.

The emphasis on teaching and learning is most pronounced in the post-1992 universities, where both researchers and librarians say that research needs are often treated as secondary to teaching needs. In some institutions, certain departments, intended to focus almost exclusively upon teaching, are effectively disqualified from any research support from the library. In other teaching-focused institutions research-oriented services are provided by the library on demand but not proactively, so that support for research is not as effective as it might be. And even in the most research-intensive institutions, librarians reported that priority is still given to resourcing teaching needs. In one case, the resourcing of teaching and learning with respect to the library was described as ‘draining’.



**Figure 3: Relative importance of teaching and research needs in driving library policy**



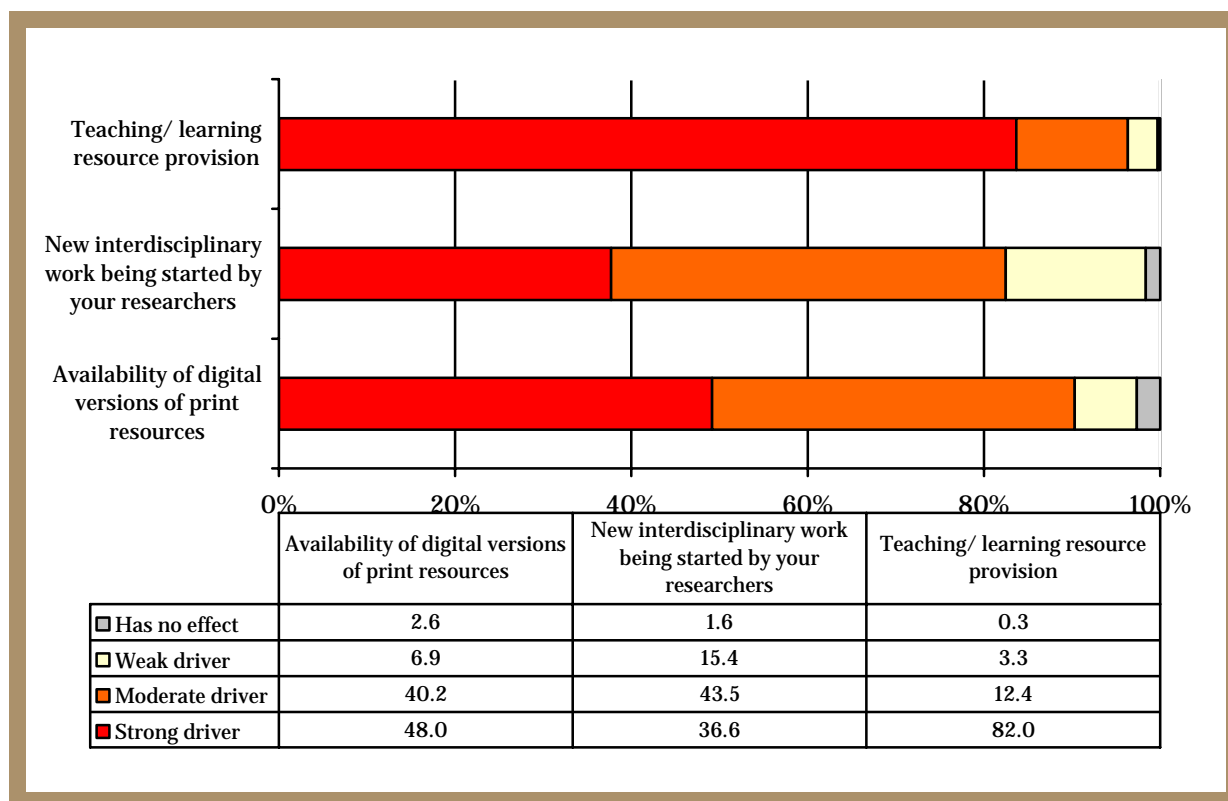
Although national strategies on research and on teaching and learning are clearly influential in shaping library policy in some institutions, the results show that the teaching and learning needs of librarians' own institutions are paramount in terms of driving library policy. Serving the teaching and research needs of people from institutions other than their own has a relatively minor influence on library policy. It is notable, however, that nearly a third of librarians *do* take account of teaching and learning needs of researchers from other institutions.

On a different tack, it is worth noting that 16% of librarians believe that international developments in research are “very important” in influencing library policy and an additional 41% think they are “important”.

#### 4.4 Factors influencing libraries' acquisition of new resources

To provide a slightly different perspective on library priorities, librarians were asked to rate three factors identified by the project's expert panel as being key to driving the acquisition of new resources. Figure 4 shows that the most important influence is the desire to provide resources for teaching and learning: 82% of librarians believe this is a “strong driver”. This provides further support for the conclusion that libraries have a particular focus on providing resources for teaching and learning.

**Figure 4: Librarians' views on the key factors driving demand for the acquisition of new resources**



The availability of digital versions of print resources is the second most important driver of acquisition strategies: 48% of librarians report this to be a “strong” driver with an additional 40% reporting it to be a “moderate” one. This reflects researchers' preference for electronic information resources over print, and libraries' shortage of space to store print resources.

Finally, it is worth noting librarians' views as to the implications of an institution's research community starting new interdisciplinary or cross-disciplinary work. For 37% of librarians this would be a “strong” driver for acquiring appropriate information resources specifically to serve this new need, for 43.5% it would be a “moderate” driver. But for 15% it would be a “weak” driver. While these figures indicate the majority of librarians would take the new need seriously, it is clear that the imperative to provide for teaching and learning is more important in relative terms.

### 4.5 Managing expectations: library funding

Librarians have a constant struggle to balance the demands for the support of research and of teaching with tight budgets. Researchers are well aware of this because for many years they have been involved in the annual round of discussions about journal subscription cancellations, new journal purchase, book budgets, and how to assign priorities for library purchasing. Researchers understand the problems faced by their libraries and that the price of current journal literature in particular has risen over the last decade or so at a rate out of line with library budget increases. Researchers are sympathetic to the plight of librarians on this issue, and concerned in particular about the increasing pressure on the provision of materials to support their research.

Funding for the library, and the priority given to this within overall institutional budgets, is a matter of concern to researchers as well as librarians. The Parry Report in the 1960s recommended that library budgets should be 6% of a university's total spending (at the time they were around 4-5%); but library budgets have tended to fall since then, and now stand at around 3% of total institutional budgets. To some researchers this comes as a surprise; they expected it to be more.

**Figure 5: Researchers' views the priority to be given to funding the library**

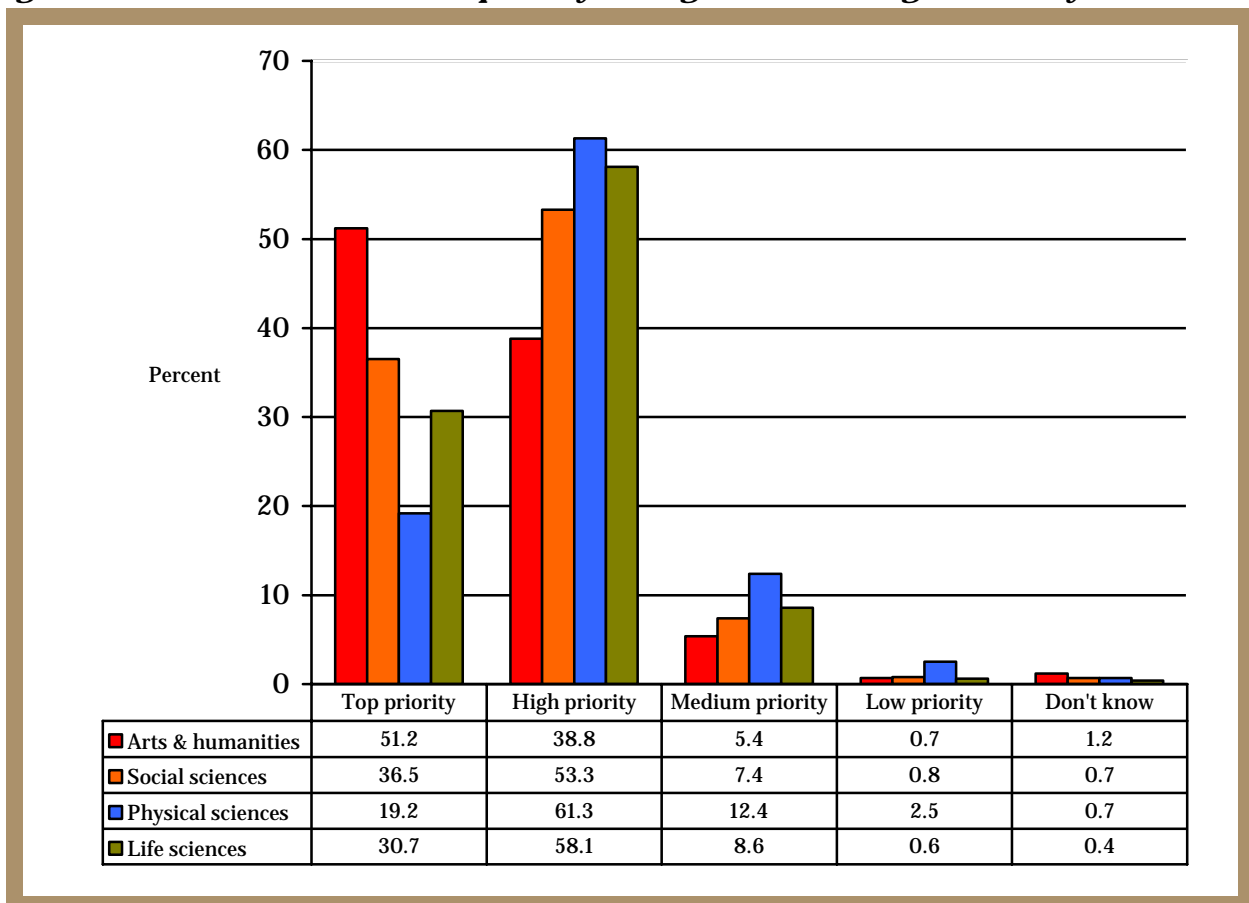


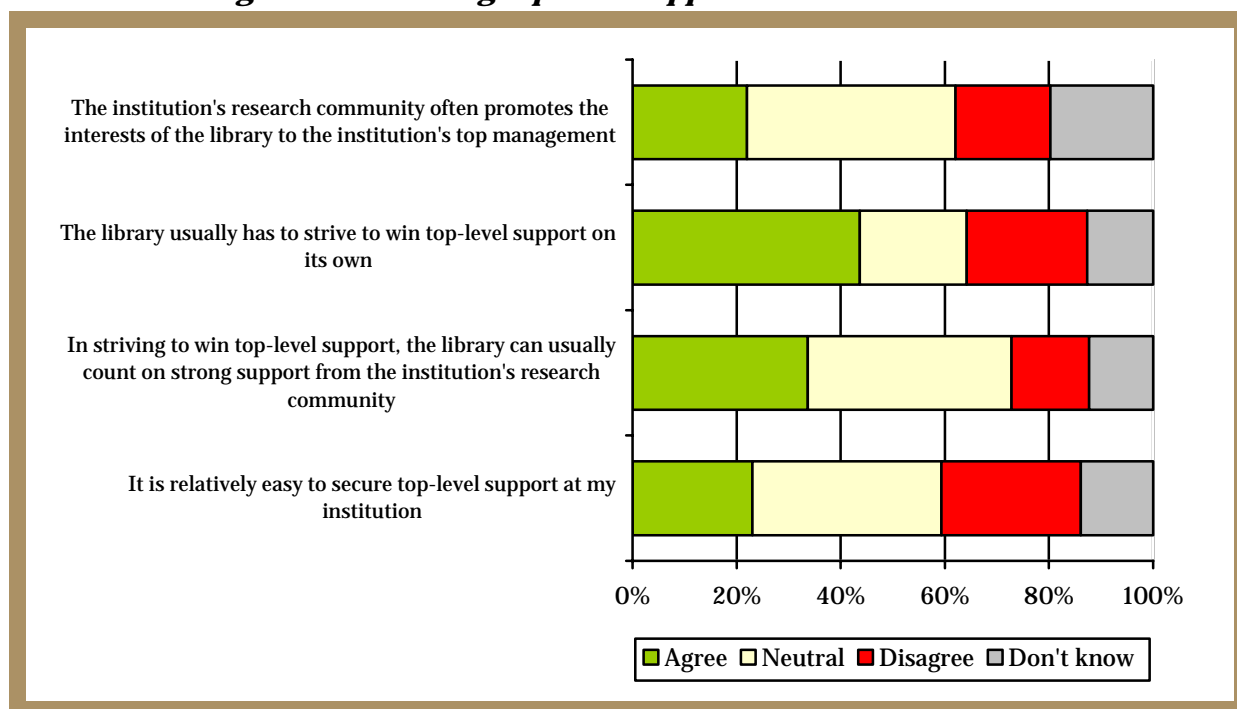
Figure 5 shows the responses gave when we asked them what priority they thought should be given to funding the library, within the context of competing demands from other parts of the institution for a finite pot of money. It shows clearly that most researchers, especially in the arts and humanities, believe that funding the library should be near the top of their institution's priority list. Support from arts and humanities researchers is perhaps unsurprising, since they make the most use of libraries. It is

clear, however, that support comes from right across the research community: the majority think that their library services deserve high or top funding priority.

### 4.6 Winning Top-Level Support

Despite this professed level of support for libraries, it is clear from our discussions with both librarians and researchers that most researchers lack any clear understanding of what the library is doing on their behalf. We discuss the issue of communications between researchers and libraries further in Section 9. But we consider here the implications for libraries' success in securing support at high level in their institutions. We asked librarians about how easy it is to secure top-level support, and the results are presented in Figure 6. It shows that only a fifth of librarians believe that their research community is active in promoting the library to top management; that just under a third believe that when they seek support they can usually count on securing it; but that 42% of librarians believe that the library usually has to strive to win top-level support on its own. Clearly the task facing librarians varies from institution to institution: 22% report that it is relatively easy to secure top-level support at their institution, whereas 26% disagree and presumably face a tougher challenge.

**Figure 6: Winning top level support: the views of librarians**



### 4.7 Improving levels of access to research literature

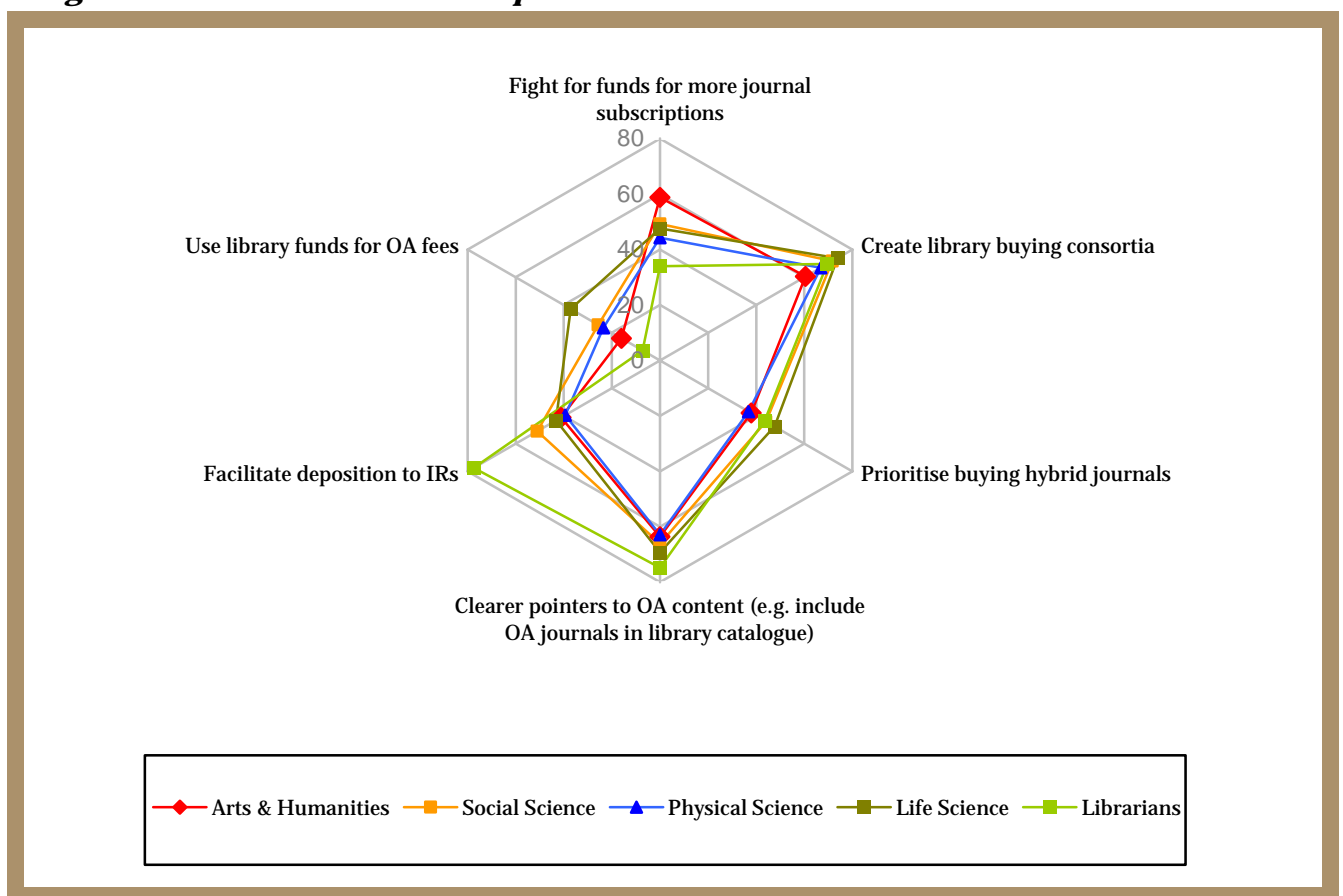
As we have already noted, library budgets have been under pressure in recent years, and many libraries have experienced real-terms budget cuts and tough purchasing decisions. In this context, we asked researchers to respond to a range of suggested approaches to improving current levels of access to research literature. The results are presented in Figure 7.

Overall about half of researchers think libraries should fight for increased funding to buy more subscriptions to traditional journals, though arts and humanities researchers are slightly more inclined to favour this approach than those in other disciplines. There is strong support (67% overall) for the steps that library consortia are taking to achieve purchasing and resource sharing economies. In terms of accessing literature via means other than subscription-based journals, there is a reasonable level of

support (41% overall) for prioritising the purchase of journals that offer a mix of subscription-based and Open Access content, though less support (25% overall) for using library funds to help authors pay Open Access publication charges. Indeed, 19% explicitly do not favour this option, and librarians like the idea even less.

In relation to open access, 43.5% of researchers support moves to facilitate the deposit of their research output into their institutions' repositories. More social science researchers favour this approach than their counterparts in other disciplines, but they are still far behind the wishes of librarians in this regard as shown in Figure 7. A clear majority of all researchers (64%) would favour the provision of clearer pointers to open access content, including in library catalogues. We discuss researchers' awareness of and attitudes towards open access further in Section 9.

**Figure 7: Percentages of researchers who favour the suggested ways for libraries at higher education institutes to improve current levels of access to research literature**



The views of librarians coincide with those of researchers on three points: creating buying and resource-sharing consortia; prioritising the purchase of journals with mixed subscription and Open Access content; and providing clearer pointers to existing Open Access content. On the other three points, however, librarians' views clearly diverge from those of researchers. Librarians do not share researchers' desire to fight for increased funding to buy more subscriptions to traditional journals; and they are even less favourable than researchers to the use of library funds to help authors pay Open Access publication charges. On the other hand, librarians are keen to focus on facilitating the process whereby their researchers can deposit their research output into their institutional repository.

### **Key Points**

- Researchers in all disciplines welcome the delivery – through the library and other sources – of digital content direct to the desktop; they are eager for more to be made available; and both researchers and librarians see this as the key driver requiring libraries to change the way they deliver services
- Many researchers perceive that libraries give greater priority to support for teaching and learning rather than research; and librarians tend to agree.
- Libraries constitute only a modest proportion of institutional expenditure; but budgets are stretched and libraries are unable to provide all the services they would wish to.
- Researchers in all disciplines indicate that they give high priority to funding the institutional library; but librarians indicate that support from researchers is not always readily provided.

## 5 A Sense of Place

### 5.1 Introduction

Traditionally, the library has been seen as the heart of the academic institution, a place of fundamental importance to every researcher, teacher and student on campus. Traditionally, too, researchers as well as students visited the library regularly, consulted the contents of its shelves, talked to library staff, filled in forms to order books or articles from that library or one in another institution, and spent time browsing, reading and working within its walls.

Many researchers still visit their library. They go to find items they know they want and know to be there; sometimes to browse, especially books, grey literature and new issues of journals; to recommend books for purchase; to obtain journals and books which they take away to photocopy for free in their own department (commonly, libraries charge for photocopying); and to get away from the telephone and other distractions of working life. That is not to say that they find university libraries entirely to their satisfaction as workplaces: many do not visit precisely because they no longer find libraries conducive to quiet work.

There are shifts in the patterns of these activities, however, driven quite strongly – though not entirely – by the electronic availability of resources. The role of the library as a *place* in researchers' working lives is becoming very different from what it traditionally has been. This section reports on the changes that are taking place and the reasons for them.

### 5.2 Frequency of researchers' personal visits to the library

Librarians have known for some years that researchers are visiting their main institutional libraries less and less frequently, and many have a good idea of the scale of the change in their own libraries. This has important implications for library strategy, and in particular on planning for the physical configuration of the library. We sought to measure the change across the sector, and to assess whether the fall in visits to the library is likely to continue. Researchers were asked to record the frequency with which they personally visited their main institutional library in 2001 and 2006, and also to anticipate the likely frequency of their visits in 2011. The results, shown in Figure 8, are unequivocal: researchers' visits to libraries have declined markedly since 2001 and the decline is set to continue, albeit at a slower rate.

The graph shows that, overall, whereas 40% of researchers personally visited their main institutional library at least once a week in 2001, by 2006 this proportion had fallen to 22.5%; and researchers' own predictions indicate that it will continue to decline, to 18.5%, by 2011.

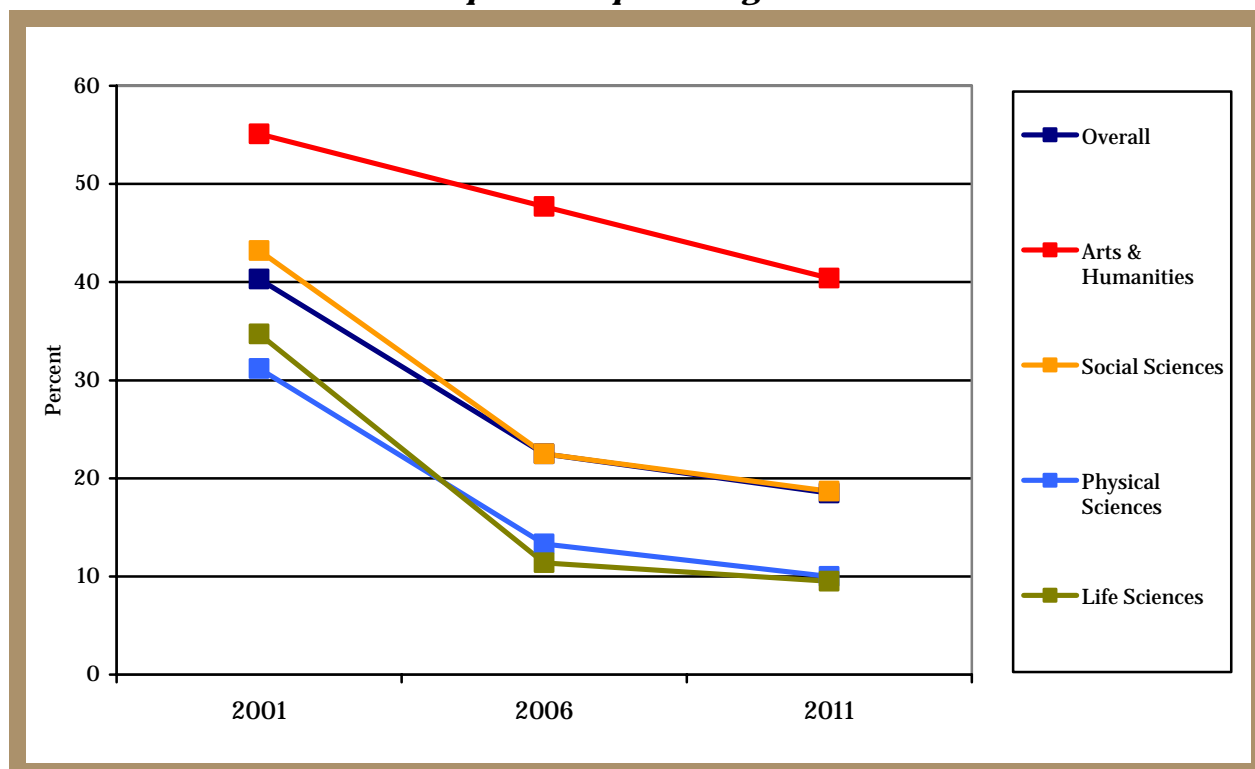
As might be expected, there are significant differences between researchers in different disciplines. For some time now it has been recognised that researchers in the arts and humanities are heavier users of libraries in person than researchers in the sciences, and our findings bear this out. In 2001, 55% of arts and humanities researchers visited their main library at least once each week but by 2006 it had declined to 48% and the downward trend is set to continue; in 2011 just 40% of them anticipate that they will be visiting their library frequently. In other disciplines, the fall in visits over the past five years has been much sharper, and the survey indicates that while numbers will continue to fall in the years to come, the rate of decline may be less precipitate. The trend for social science researchers mirrors the average, falling from 43% in 2001 to 22% in 2006 and is on course to fall further to 19% by 2011. It is, however, researchers in the life and physical sciences where frequent use of institutional main libraries

will fall to their lowest levels. By 2011 just 10% of physical science researchers and 9.5% of life science researchers will visit their libraries at least once each week. It may be a rare occurrence to see a science researcher in a library in five years time: 47% of physical science researchers say they will visit their library *less* than once each month and a further 12% say they will never visit their library. The situation is even more stark for life scientists, where 46% say they will use the main institutional library less than once each month by 2011, and 23% think they will never visit the library in person.

This trend in behaviour was confirmed in our focus groups. Whereas researchers in arts, humanities and social sciences said they visit the library frequently, most scientists tend now to access library resources electronically, from their workplace or from home. Some scientists say they 'never' visit their library and cannot remember the last time they did so. They do, however, access electronic resources frequently, sometimes more than once per day. They do not use library-provided materials less, but they access them in a different way.

As we have noted, visits to the library can arise for many reasons other than to consult library content. Most researchers said that they cannot yet order inter-library loans electronically, and expressed the opinion that this was not helpful. On the other hand, those who are able to order remotely admit that it often results in items being ordered that turn out to be unsuitable. Their former practice, which was to go to the library and discuss the order with a librarian, frequently prevented unsuitable items being requested. The issues surrounding inter-library lending are discussed further in section 6.6.

**Figure 8: The percentage of researchers who visit their library at least once per week and predicted percentage for 2011**

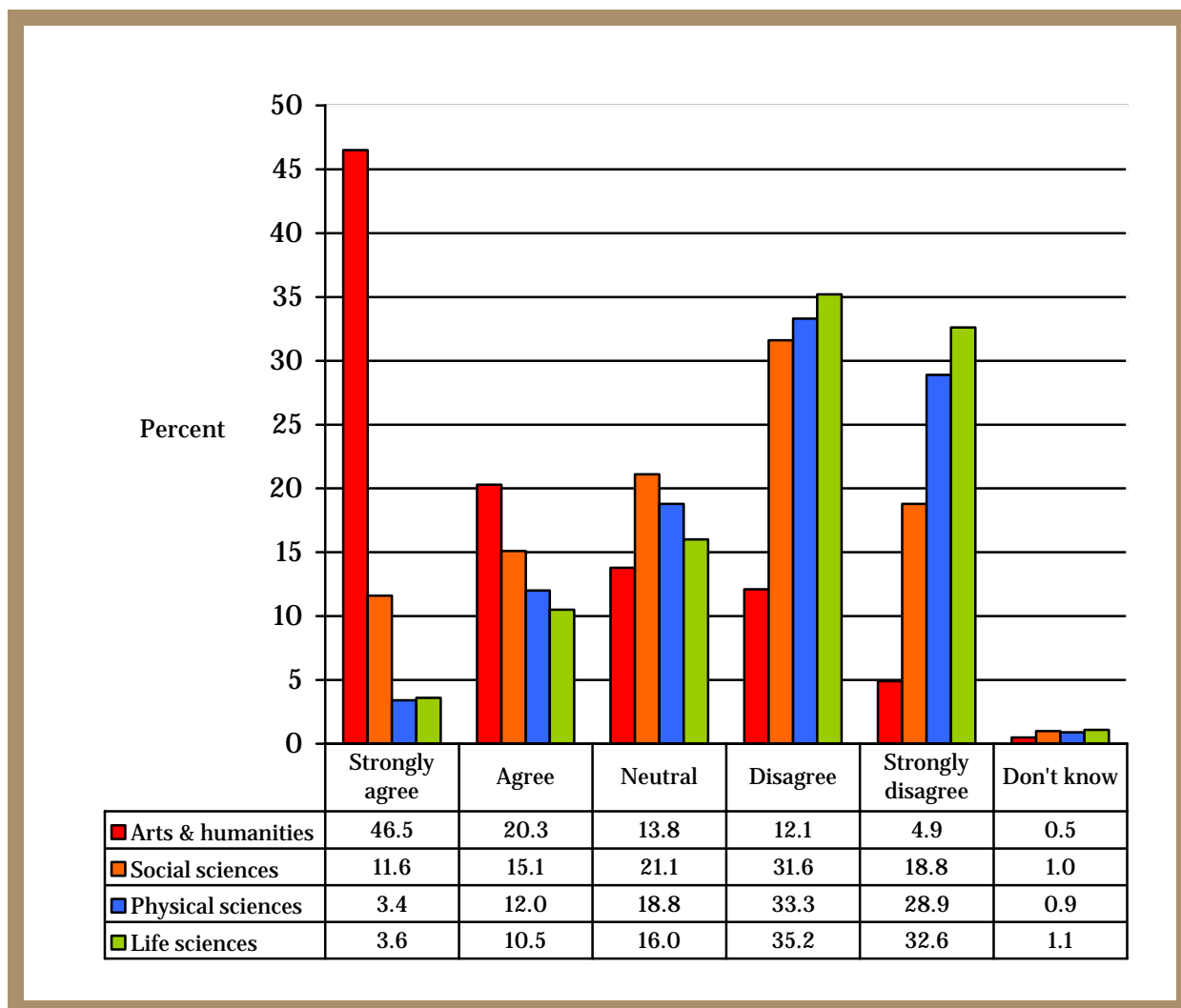




### 5.3 The library as a laboratory

A clear message from the survey is that researchers in the arts and humanities perceive libraries in a different light from their social science and science colleagues. Not only do they make more personal visits and use print-based resources more heavily but, for many of them, the library is the equivalent of the scientists' laboratories. In other words, libraries often house the objects of their research. Figure 9 shows the comparison between arts and humanities researchers and the other three broad groups of researchers. Nearly 67% of arts and humanities researchers either "strongly agree" (46.5%) or "agree" (20%) with the statement that the main objects of their research are located in libraries. For many of them, study of publications and archival documents is core to their research. Although obvious, it should be noted here that these documents may not always be text-based: sometimes they are musical scores, images, films or audio materials and may exist in only one copy or in just a few copies globally.

**Figure 9: Researchers for whom "the main objects of my research are located in libraries"**



As might be expected, most life and physical science researchers disagree with the notion that the objects of their research are held in libraries. We have not investigated the small proportion of scientists who do agree with the statement. One explanation is that they are working in the fast-growing fields of informatics – text- and data-mining technologies – and are using the published literature for secondary analysis.

## 5.4 *The physical resources offered by institutional libraries*

The survey results point to five key aspects of the physical resources offered by institutional libraries which researchers particularly value. The differing extent to which these are considered important by the four major disciplinary groups is shown in Figure 10 below and each is described in detail here.

### ■ Convenient location

Most of all, researchers believe the institutional library must be in a convenient location. 46% of respondents think this is “very important” and a further 37% think it is “important”. This is perhaps surprising in light of the relatively low number of personal visits made to the library, though the average is pulled up by arts and humanities researchers, 54% of whom think a convenient location is “very important”, and social science researchers, 52% of whom concur.

### ■ Convenient opening hours

Almost as important as location are opening hours. Overall, 44.5% of respondents believe convenient opening hours to be “very important” and a further 37% consider them “important”. This issue is especially close to the hearts of arts and humanities researchers; 59% of regard convenient opening hours as “very important”, compared with just 35% of life and physical science researchers. Some arts and humanities scholars told us that they would work in the library more if opening hours were more convenient: Sunday opening, particularly, was mentioned frequently in this respect.

### ■ A place to browse current issues of printed publications

In third place, many respondents value the library as a place to browse current issues of printed publications with 39% rating this attribute as “very important”, and a further 35% rating it “important”. The value placed upon this varies markedly, however, with discipline. Smaller proportions of life science (26.5%) and physical science researchers (28%) rate the library as a place to browse current issues as “very important” than their colleagues in the social sciences (47%) and the arts and humanities (59%), who visit the library more frequently.

### ■ A place for quiet individual study

The institutional library is still valued as a place to undertake quiet individual study, but again the value varies by discipline. Overall 37% of respondents believe this aspect of their library to be “very important” and a further 25% think it “important.” Not surprisingly, the facility is greatly valued by 53% of arts and humanities researchers. The proportions for the other groups are notably smaller: social scientists 40%; physical scientists 29%; and life scientists 28%.

Researchers told us that although they would like to continue to view the library as a work place, increasingly the conditions in libraries make working there very difficult. Libraries are frequently noisy, because of the level of conversation (especially amongst students), the use of mobile telephones (bans are commonly flouted), and the development of ‘group work spaces’. Quiet zones may alleviate the problem but they often do not work well, with noise rules often ignored. Some researchers went as far as to suggest that since so many people now access library content electronically from their workplace or home, the library has taken on a new role – that of somewhere to talk and discuss.

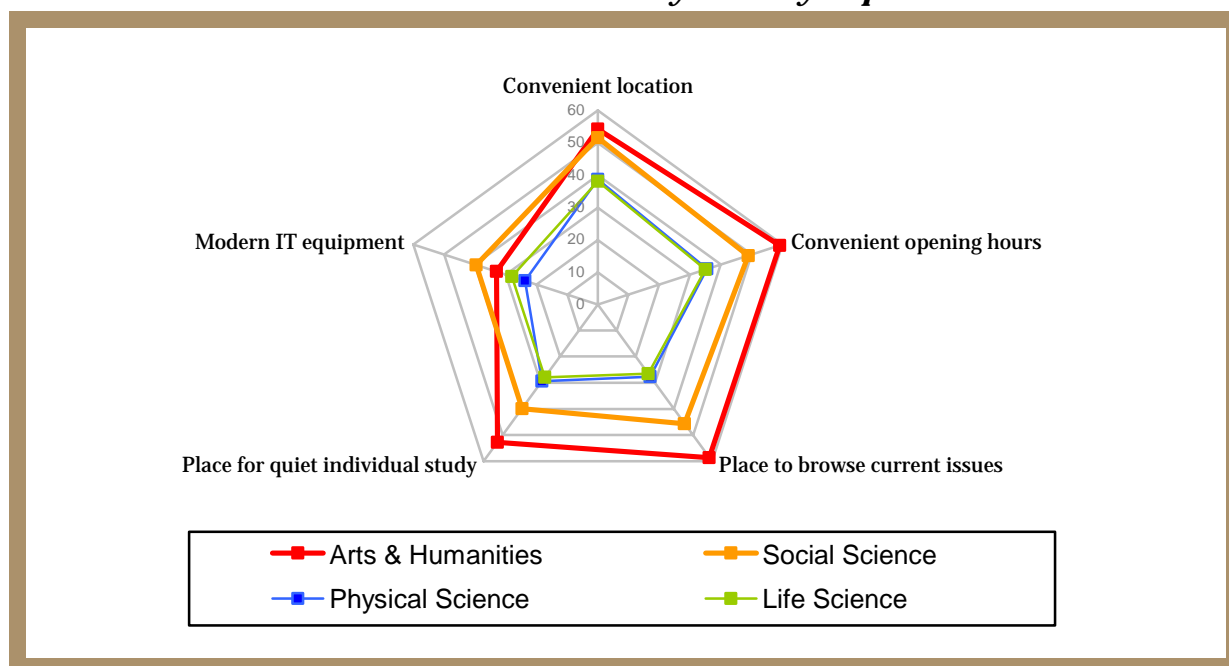
Librarians acknowledge the problem. They accept that many researchers see the library as ‘an undergraduate space’. They go so far as to admit that often the only way to get money for the library is

to badge it as a learning hub for students. This tends to exclude researchers, since their needs for quiet workspace do not accord with the modern trends of library-integrated coffee shops, communal areas or group work spaces, and they end up, in the words of one librarian, 'feeling disenfranchised'.

- Provision of modern IT equipment to access digital resources

In fifth place is the provision of modern equipment to access the digital information resources used by researchers. 32% of researchers believe this is a "very important" aspect of their library's provision and a further 26% think it is "important". Social scientists perceive the benefit most, with 40% of them reporting such provision to be "very important". Comparable figures for other disciplines are arts and humanities 33%, life scientists 28% and physical scientists 23%.

**Figure 10: Percentage of researchers who rate key aspects of the physical offerings of their institutional library as "very important"**



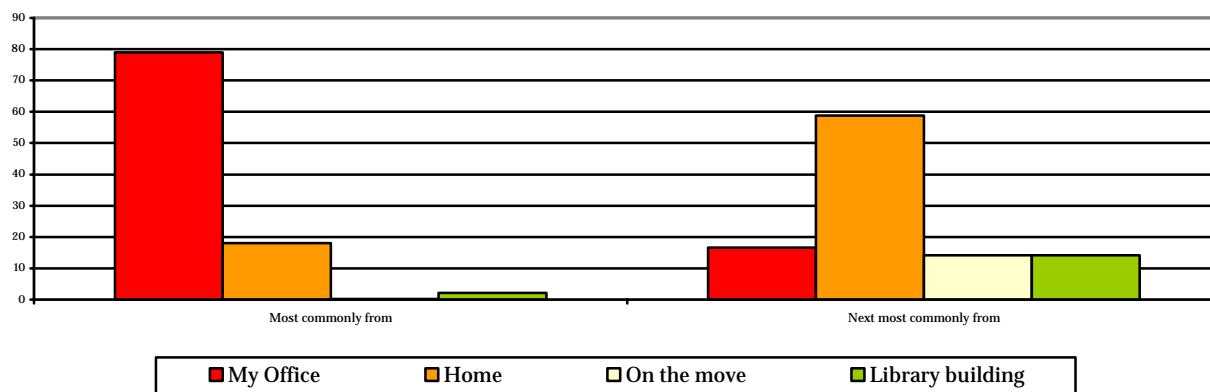
It is instructive also to consider the physical resources offered by institutional libraries that are perceived to be less important than those listed above. The provision of high quality buildings and associated infrastructure is considered important but not necessarily essential. Overall 26% of respondents see such provision as "very important", yet a sizeable minority do not place too much emphasis on the physical state of the buildings. Relatively few researchers consider the library to have an important role to play as a place for group study and learning; indeed, 19% of them say this is "not very important" and a further 31% think it is "not at all important". Finally researchers do not, on balance, place much importance on the library's role as a congenial meeting and networking space.

### 5.5 The location of researchers

The survey indicates that the bulk of researchers (79%) access electronic information most commonly from their office. The next most common location is their home. Relatively few do so from within library buildings. This overall figure masks disciplinary-based differences. Whereas 90% of physical and life science researchers prefer to access electronic information from their offices, the corresponding figures for social science and arts and humanities researchers are 76% and 58% respectively. Life

scientists are least likely to access such information from the library: only 10% gave this as their second choice, while 22% of arts and humanities researchers did so.

**Figure 11: Percentage of researchers who access electronic information various locations**



Added to this tendency to stay at their desks or in their laboratories, scholars are also opting for lifestyle choices that suit them best but which add to the difficulties of libraries. Many universities used to have a condition in the terms of employment that staff must live within a certain radius of the institution. That condition has now largely disappeared, and researchers often choose to live some considerable distance from the institution. They visit the institution in order to teach, to meet with colleagues, and sometimes to visit the library; but on the whole they are absent from the institution while they conduct their research. This brings problems for libraries in seeking to meet the research needs of those scholars; and negotiating agreements with publishers to secure access to digital information from off-campus locations can be time consuming and tricky. Moreover, 'distant' researchers are beginning to suggest that they should be able to use the library services of the nearest institution to their home, bringing with it the requirement for libraries to try to put in place rather complex reciprocal usage arrangements. This issue arises also in the context of new collaborative working practices that are discussed in Section 7.

## 5.6 Libraries at other institutions

### 5.6.1 Reciprocal borrowing and reading schemes

One of the key lines of enquiry for this study has been to establish the extent to which researchers rely on libraries at institutions other than their own. Inter-library lending is discussed in Section 6.6: in this section we address visits by researchers to other institutions' libraries.

The frequency with which researchers visit other libraries in person has declined over the past five years but the need to access resources from afar is still pressing: only 5% of researchers say they never need to consult or obtain material held in libraries outside their own institution. In fact 47% of researchers make use of reading rights at other institutions' libraries and 29.5% of them exercise borrowing rights at other institutions' libraries. It is worth noting in this context that 11% report they are registered members of SCONUL Research Extra, a reciprocal borrowing scheme between university libraries in the UK. The focus groups and telephone interviews, however, revealed only a patchy awareness of the scheme: some researchers, particularly in the arts and humanities, are familiar with the scheme and use it, whereas many in the sciences are completely unaware of its existence.

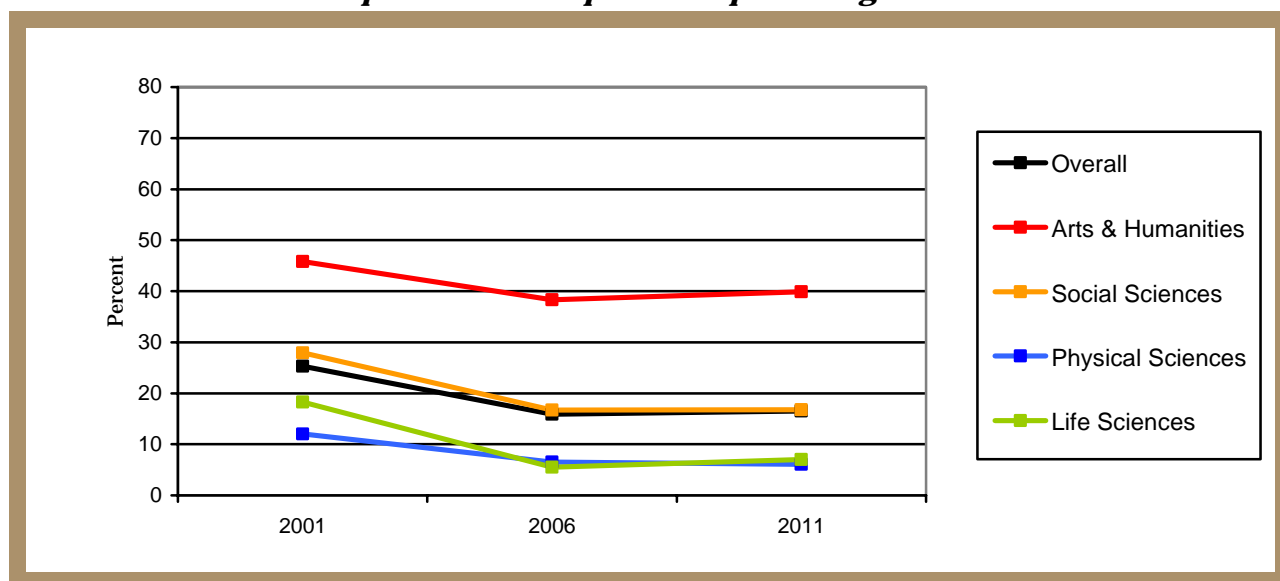
The scheme is nevertheless showing encouraging trends: from 2003 to 2005 there was an overall increase of 61% in registrations and a 167% increase in usage. In the first half of 2005, 3,934 researchers and 5,570 research students were registered with the scheme. There were 99,501 loans or renewals in that period, of which 56,734 (57%) were by research students. This is clearly a success story, and the comments we heard in our discussions with researchers confirmed that the scheme is helpful and considered as a major advance in improving access to material not available locally. There were also expressions of surprise – and, more importantly, interest – from researchers who had not heard of the scheme. It could go a long way towards solving access problems related to monographs or research texts that are otherwise difficult to locate and obtain.

5.6.2 Researchers' personal visits to libraries at other institutions

Despite the success of SCONUL Research Extra and other reciprocal access schemes, our survey shows that researchers' use of libraries other than those in their own institution has decreased markedly since 2001, although this trend is expected to level off in the future. This holds true for all four discipline-based groups of researchers, the results for which are presented in Figure 12.

The graph shows that researchers in different disciplines have different needs in using libraries other than their institutional library. Not surprisingly, since their work often requires access to rare or unusual source material, arts and humanities researchers are the most common users of other institutions' libraries: 38% did so in 2006. At the other end of the scale, only 5.5% of life science researchers travelled to other libraries in 2006. And in the physical sciences, the proportion of researchers travelling to other libraries halved from 12% in 2001 to nearer 6% in 2006. Scientists consult journals much more than books, of course, and journals are often better provided for locally by libraries and in digital form via researchers' desktops. Occupying the middle ground, a small but significant proportion of social scientists make use of libraries other than their own although the proportion doing so has fallen by 11% in the past five years.

**Figure 12: The percentage of researchers visiting libraries at other institutions at least once per month and predicted percentage for 2011**



Researchers visit libraries outside their institution to obtain or consult special source materials, to view journals to which their own library does not subscribe or books the library has not purchased. For journals they make less effort to travel, finding other ways to acquire the articles they need or giving up altogether if the search proves onerous. Arts and humanities scholars needing specialised books or

unique source material for their research may travel extensively to other libraries. In some cases, trips overseas are required and long-distance travel within the UK is not uncommon. In this regard, Research Extra has provided a useful service, though it cannot provide the unique and special collection material that is not available for loan even within host institutions; and Oxford and Cambridge are notable non-participants in the Research Extra scheme.

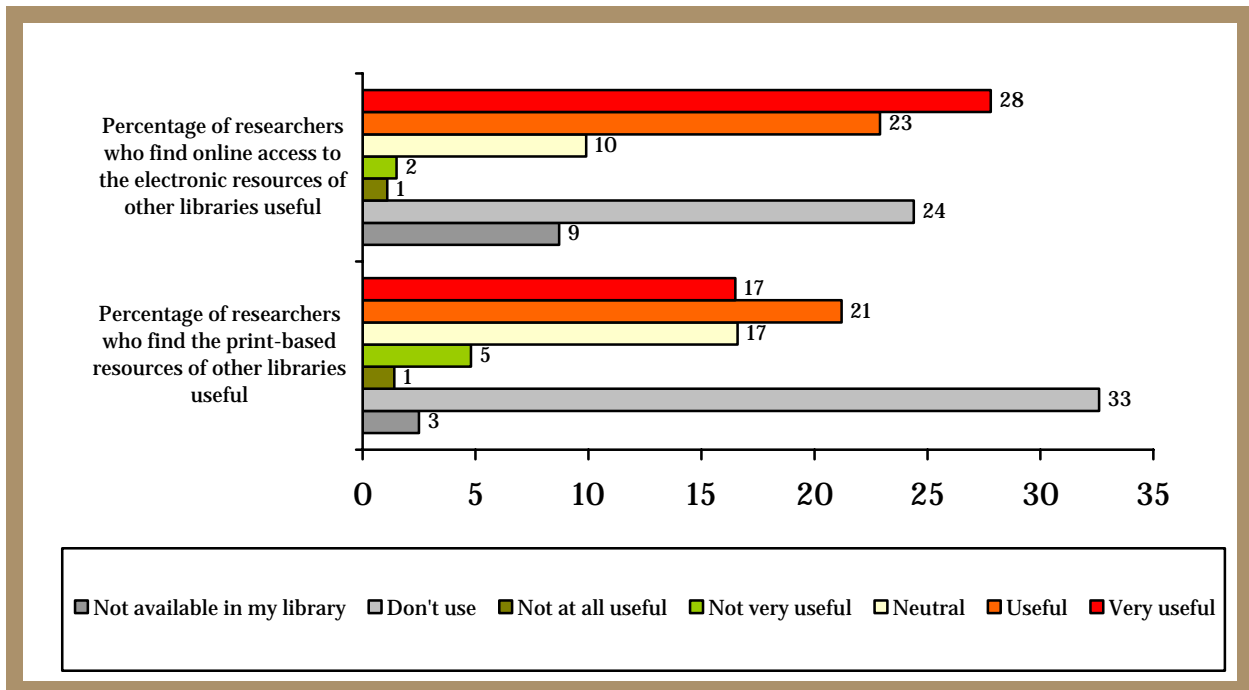
Scholars who need to make use of other institutions' libraries generally express some dissatisfaction with the procedures that must be followed in order to do so. They would like to see simplified reciprocal access, reading and borrowing arrangements between libraries. This is an ideal especially desirable for libraries within a specific locality or region, where researchers may willingly make the effort to travel relatively short distances to obtain material of interest. If encumbered by onerous formalities and restrictions when they wish to do this they are much more reluctant to make it a habit.

### 5.6.3 On display: what researchers use at other institutions' libraries, and how

A significant proportion of researchers value the facility to access the electronic resources of other libraries: 28% believe this to be "very useful" while a further 23% rate it as "useful". Even though 24% of researchers say they don't access other libraries' information resources online, just a tiny proportion say such a service is not useful. Again the overall figures mask some clear disciplinary differences: whereas online access to other libraries' resources is used by just 21.5% of life science researchers and 22% of physical science researchers, the proportion for social science researchers is 31% and for arts and humanities researchers 38%. It is notable, however, that while significant numbers of researchers attach high value to the resources of other libraries, this does not necessarily result in heavy use: only 6% of librarians think that online access to the electronic resources of other libraries attracts "very heavy use" while 18% think the facility attracts "heavy use". For most, the use is "moderate" (29%), "light" (17%) or "very light" (9.5%); and 12% report that their library does not offer this type of access.

As Figure 13 shows, a sizeable minority of researchers also find the print-based resources of other libraries "very useful" (16.5%) or "useful" (21%). Although 33% of researchers say they don't use print resources outside their institutional library, only 6% of all researchers believe that the availability of such resources is not useful to them. Again there are differences by disciplinary group, and for print resources the differences are very stark. Just 6.5% of life scientists and 5% of physical science researchers rate access to the print-based resources of other libraries as "very useful". By contrast, 15% of social science researchers find such access "very useful"; and for arts and humanities researchers the proportion rises to 46%. Again, there is a tension here with librarians' views of the extent to which researchers make use of print-based resources from other libraries. 5% say use is "very heavy", 15% opt for "heavy" use, while the majority think the pattern of use is somewhat less: 42.5% say that use is "moderate", 20% say it is "light", and a further 9.5% report usage being "very light". Just 6% of librarians indicate that this service is not available in their library.

**Figure 13: Researchers who find print or online access to other libraries' information resources useful**



### Key Points

- Researchers visit the library less frequently than they did five years ago and this trend will continue; only in the arts and humanities do a significant majority of researchers put a high value on the services offered *in* library buildings
- Arts and humanities researchers are the heaviest users of the library and its physical resources, because fewer of the information resources they need are available digitally, and because for some libraries constitute the 'laboratory' which contains the objects of their research. But this will change as more resources become available digitally.
- Libraries must consider very carefully in the light of these developments the configuration of their space and services for researchers, particularly in terms of opening hours and the provision of facilities for quiet individual study
- The importance of other institutions' libraries remains relatively strong for researchers in the arts and humanities, but more could be done to facilitate the use of other libraries and to promote reciprocal access schemes
- As researchers increasingly work away from their home institution or wish to use the resources of another institution as a matter of routine, there is a need urgently to address the issues surrounding reciprocal access to digital resources



## 6 What are they doing? What will they do next? Researcher behaviour

### 6.1 *Introduction*

As we have already noted, researchers find the electronic information resources provided by their library useful, particularly current and back issues of electronic journals. There is, however, a wide range of other print and electronic resources and finding aids offered by libraries and the extent to which researchers find these different resources useful is explored in this section.

### 6.2 *Researchers' use of print information resources*

The widespread availability of electronic versions of scholarly information resources is a relatively recent phenomenon. Until the early 1990s researchers had to rely mostly on print-based journals, books, reference works and so forth. Since, at present, many libraries are adapting their policies to focus more on electronic access to such sources, the survey set out to discover the extent to which print-based information resources remain useful to researchers. It is worth noting again here that reliance on print-based resources may mean travelling to other libraries to gain access to them.

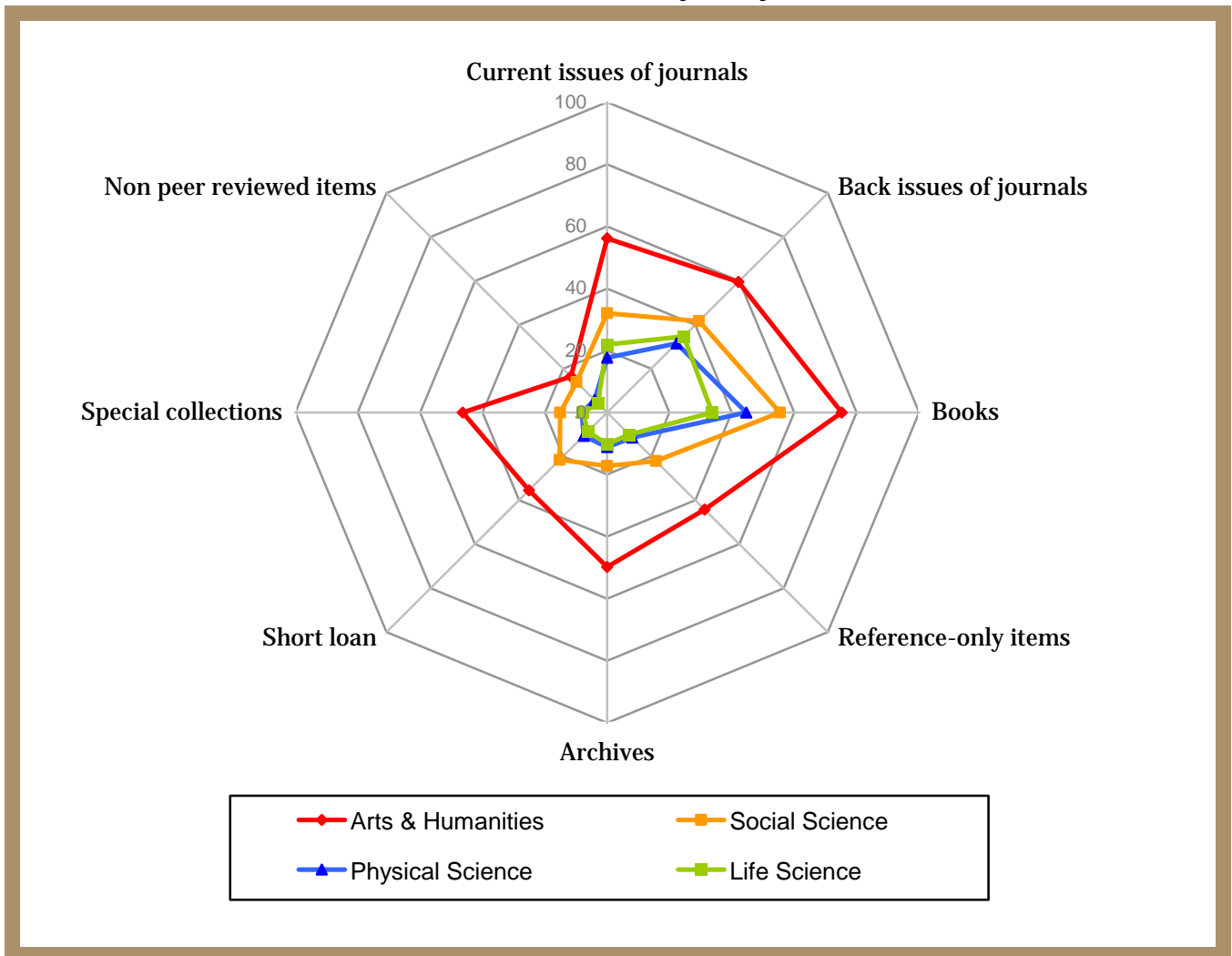
Print-based information resources are in general regarded as less important and useful than electronic resources. Of the array of print resources on offer, books are perceived to be the most useful: 52% of researchers said they find books in print to be "very useful". Current and back issues of journals in print form are also found to be useful by many researchers though, as Figure 14 demonstrates, the results are significantly differentiated by discipline.

Many more researchers in the arts and humanities find printed information resources useful than their counterparts in other disciplines. Books, for example, are regarded as "very useful" by 75% of arts and humanities researchers as compared to 55% in social sciences, 47% in physical sciences and 34% in life sciences. Similar margins of difference are evident for current and back issues of journals and reference-only items. The greatest inter-disciplinary differences pertain to archives in print or manuscript and special collections in print. Archives are rated "very useful" by 50% of arts and humanities researchers and special collections by 46%. By comparison the figures for life science researchers are 10% and 8%.

Whereas one might have anticipated this pattern of attitudes towards archives, special collections and books it is notable that arts and humanities researchers also still find print versions of current and back issues of journals very useful. This is probably because although there is now a move towards electronic publishing of arts and humanities journals, the digital format is by no means ubiquitous as yet. Researchers in these disciplines told us that they value electronic access to journals in just the same way as scientists and social scientists do, but there remains more to be done in this area before the whole of the scholarly journal corpus is delivered in digital format.



**Figure 14: Percentage of researchers who rate print information resources provided by their institutional library "very useful"**



### 6.3 How researchers find information

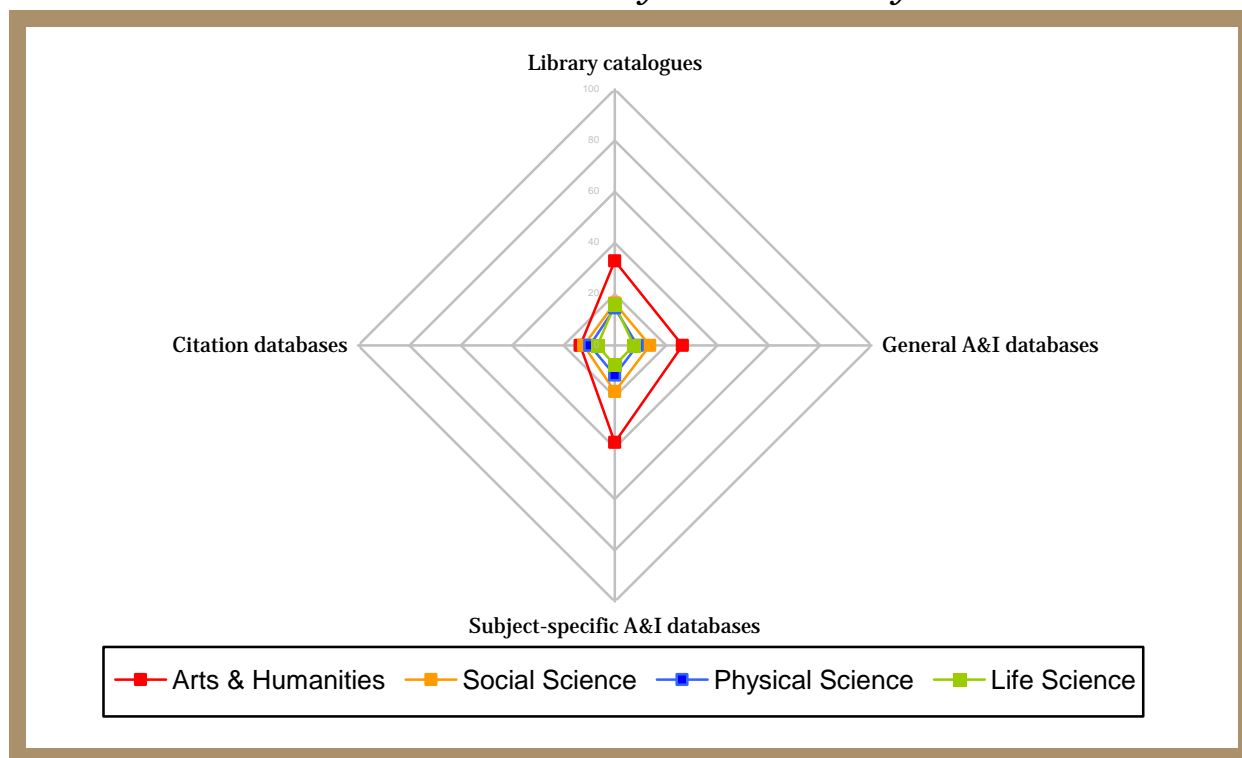
Librarians report that bibliographic databases are still being used, but when full-text offerings came along many researchers abandoned the bibliographic products. There are many databases, and some disciplines have more than most. In social sciences, for example, librarians report some confusion within the community as to why there are so many and which are the most appropriate to use. There is a skills development issue here.

#### 6.3.1 Printed finding aids

We used the survey to help provide an understanding about the extent to which the array of finding aids provided by libraries is helpful to researchers in finding the information they need. Figure 15 shows that the proportion of researchers who find print-based finding aids "useful" or "very useful" is low, with the partial exception of arts and humanities researchers. Most researchers don't use these tools or don't find them useful. Again it is the arts and humanities researchers who are more likely to use print-based finding aids than their colleagues in other disciplines, whose use of such aids is minimal. For some arts and humanities scholars, however, such aids are viewed as essential tools. With much longer timeframes and a different set of needs from scientists, they have a different attitude to looking for information and they spend a greater proportion of their time on it. Indeed, it would be fair to say that

information-seeking is not only a more significant activity in the lives of arts and humanities scholars but they are probably more skilled at it than the average scientist. Scientists have different needs and a different set of circumstances in which to operate; with much larger amounts of relevant or partly-relevant material on offer there is a greater onus on sifting and sorting, rather than finding.

**Figure 15: Percentage of researchers who rate print-based finding aids provided by their institutional library “useful” or “very useful”**

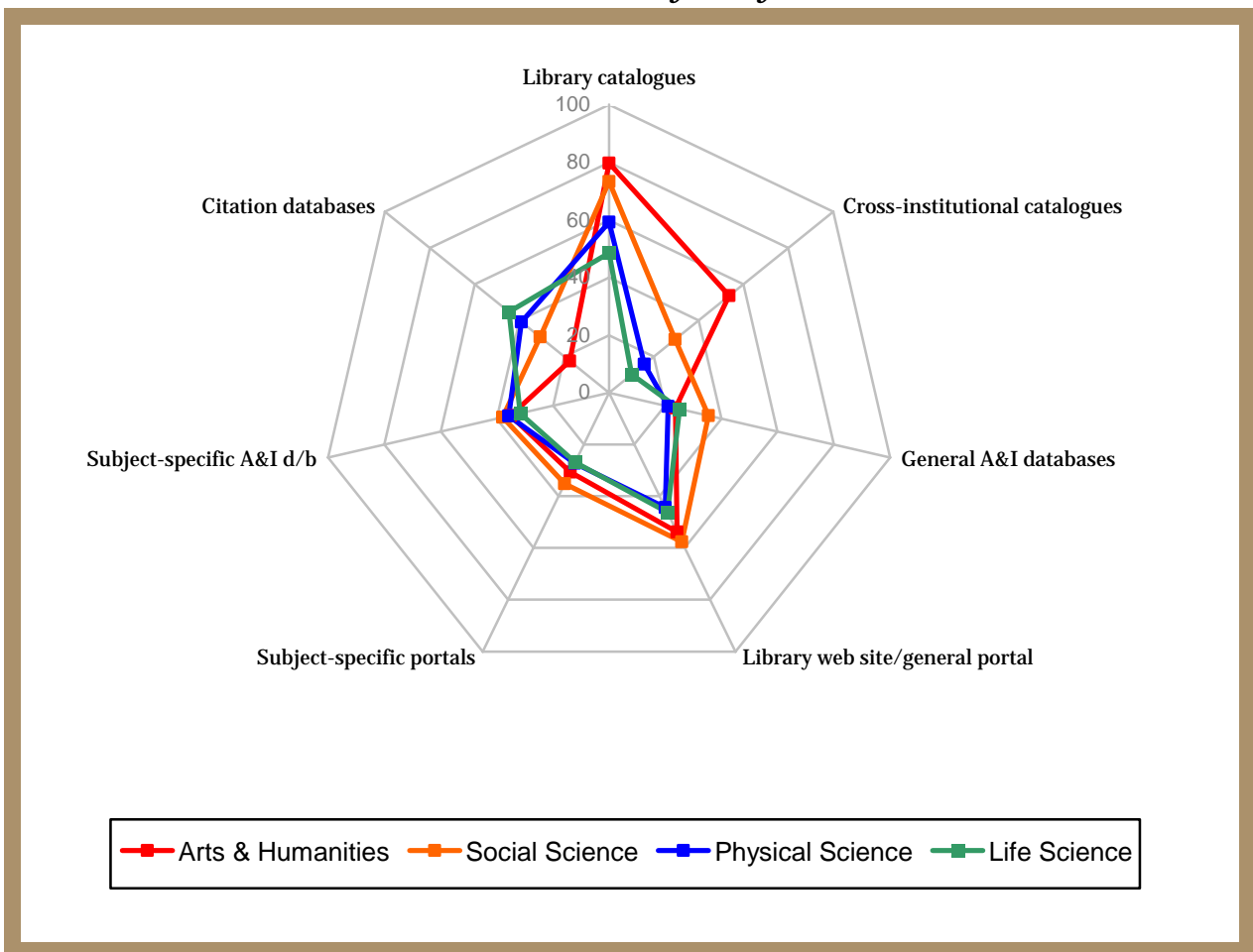


### 6.3.2 Digital Finding Aids

In contrast, researchers' use of electronic finding aids is high. Figure 16 maps the proportions of researchers in the four broad subject disciplines against the types of electronic finding aids they find “very useful”. It is notable that arts and humanities researchers find the library catalogue to be “very useful” in the greatest numbers, and they also value cross-institutional catalogues to a greater extent than researchers in other disciplines. This underlines how arts and humanities researchers often need to look beyond their own institution's information resources to find the material they need.

The results indicate that libraries' websites or portals are well thought of by researchers across the board. It is also notable that the proportions of researchers in different disciplines using subject specific portals and subject-specific abstracting and indexing databases are broadly similar. The resources where there is most divergence in the views of researchers in different disciplines are cross-institutional catalogues and citation databases. Science researchers are far less inclined to find cross-institutional catalogues “very useful” than arts and humanities researchers and, to a lesser extent, social science researchers. On the other hand science researchers are clearly more likely to find citation databases to be “very useful” than social science and arts and humanities researchers. These findings tally with those described in the RIN study of researchers' use of discovery services<sup>9</sup>.

**Figure 16: Percentage of researchers who rate electronic finding aids provided by their institutional library "very useful"**



Beyond the precision implied in these figures, we also detected in our focus groups and interviews another tendency on the part of researchers: a 'good enough' and not necessarily rigorous approach which relies on finding aids with which researchers are familiar or which produce some sort of result. The RIN discovery services study<sup>9</sup> found that many researchers use a strategy of finding a large set of results and then relying on their own expertise to refine them, an approach that may be very effective. But some researchers told us that they like to use Google and that they often behave according to the familiar phrase, 'if Google doesn't find it, it doesn't exist'. Some libraries are already running courses on 'getting the best from Google Scholar', and at least one library has created a learning object on it.

The information-seeking behaviour described here suggests that there may be a tendency for some researchers, beset by time pressures and in some ways rather well-supplied with information, to adopt the 'good enough' behaviour pattern. In this case our findings do not tally with those described in the discovery services study<sup>9</sup> which reported that researchers' key fear when they are searching for information is of missing things of importance. What is clear is that changes in information-seeking behaviour could have profound implications for scholarship in the long run; and that material that is digitised and for which there is easily-available and accurate metadata will be visible and usable by scholars. What remains in print may well be sought out, but probably only if it is digitally catalogued. Indeed, some researchers as well as librarians pointed out that more use would be made of library holdings overall – especially special collection materials – if they were all properly and accurately

catalogued so that resource discovery tools could locate them effectively. Librarians acknowledge that there is much to be done in this area, but cite inadequate resources – time and staff expertise – as the cause of cataloguing backlogs and deficiencies.

#### 6.4 *How researchers work using their library holdings*

Librarians find that there is a paradoxical twist in researchers' behaviour with respect to journal articles and other literature acquired via electronic databases. The researchers say that it is critical that they have access to full-text articles, but when provided with full-text databases they then, say librarians, frequently go only as far as the abstract. And despite librarians' efforts, at considerable expense, to secure access to full-text databases with as broad a scope as possible, researchers then commonly state that 'Web of Science is enough'. A seemingly insatiable demand for full-text articles is thus not always accompanied by evidence of heavy use.

Previous studies have shown that in general *students* use only the journals that are available in the local library, even if it is possible to order articles through an inter-library lending system<sup>20,21</sup>. A study of researchers shows that they are slightly more likely to go outside the local holdings though even they usually do not: only in 20% of cases do they pursue this option, preferring instead, when finding that an article is not available in full-text locally, to return to their search and look for others<sup>22</sup>. Moreover, when presented with a locally-held option in print or microform researchers are also more likely to abandon their quest than to pursue it.

Researchers' reluctance to pursue articles that are not available immediately and electronically has major implications for collections management policies in libraries and also for research practice. Even when accessing articles electronically through inter-library lending is simple, users seem unwilling in most cases to make the effort to do so. Articles may remain unread, or researchers may simply stop using the library system at this point and adopt other tactics for accessing content not held locally.

#### 6.5 *How researchers obtain items not available in their local library*

Because libraries cannot provide comprehensive access to all the scholarly literature, it is inevitable that researchers will, at some point, need to source the articles they need elsewhere. The survey indicates that researchers are most likely to turn to inter-library loan (ILL): 80% of them use this service at least occasionally. The second most popular option – used by 40% of researchers - is to contact the author to request a copy of the article; and we know from the focus groups that they also contact colleagues in other institutions. But many researchers, if they come up against a toll barrier when they are searching for an article, say that they 'give up and find something else I can get for nothing'. Thus very few researchers currently purchase articles directly from publishers' websites: 8% indicate that at least on occasion they buy the article and reclaim the costs from their research grant, 4% do so and reclaim the costs from their department or research group, and 2% do so and reclaim the costs from their institutional library. The librarians' survey indicates that even smaller numbers of librarians will purchase articles from publishers' websites.

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<sup>20</sup> Hardesty, L and Oltmanns, G (1989) How Many Psychology Journals Are Enough? A Study of the Use of Psychology Journals by Undergraduates. *Serials Librarian* **16**, nos. ½, 133-153.

<sup>21</sup> Joswick, K E, and Stierman J K (1997) The Core List Mirage: A Comparison of the Journals Frequently Consulted by Faculty and Students. *College and Research Libraries* **58**, 48-54.

<sup>22</sup> Stengel, M (2005) Using SFX to identify unexpressed user needs. *Collections Management* **29** (2), 7-14.

**Figure 17: Sources of journal articles not available in local library and, where required, authors' method of payment**

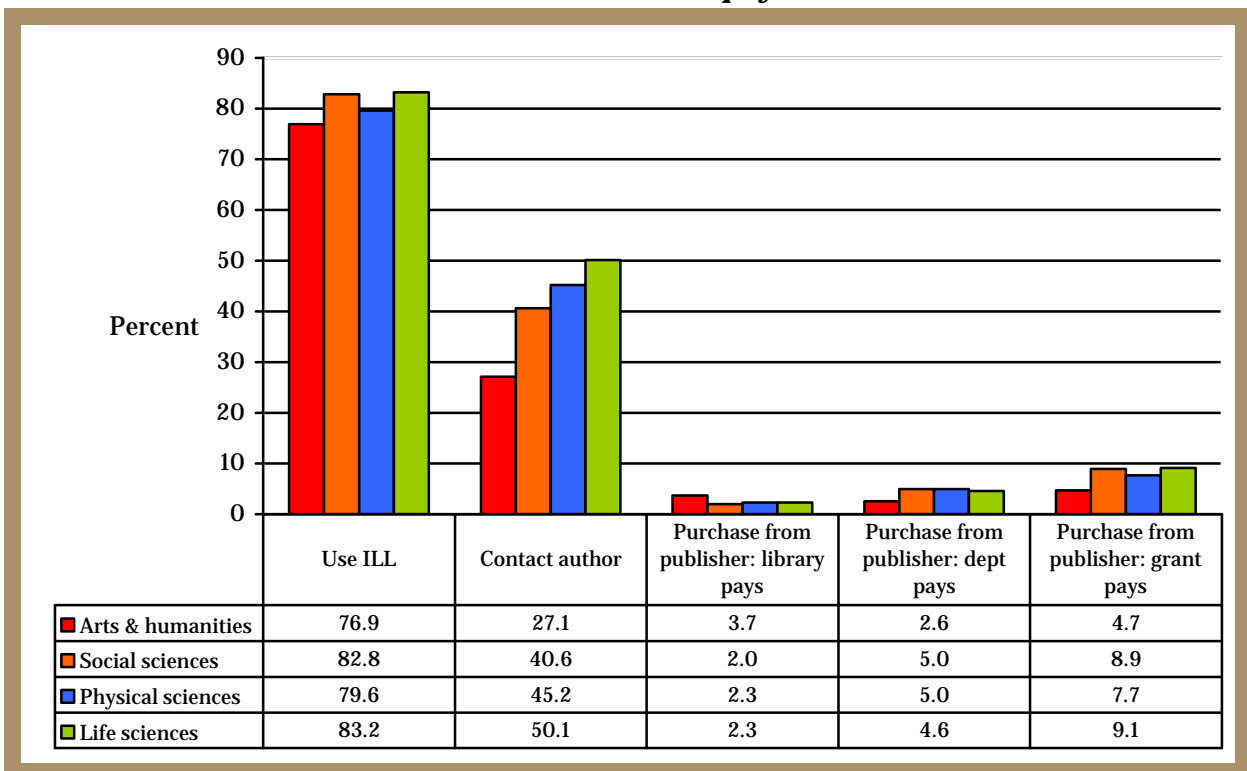


Figure 17 shows that researchers in all four groups of disciplines depend upon ILL services, and we discuss these in Section 6.6. Science researchers are most likely to contact authors directly to obtain copies of articles, whereas many fewer arts and humanities researchers do so. In the small numbers who purchase articles directly from publishers' websites, there is little discernible difference between science and social science researchers; but it is worth noting that arts and humanities researchers are less likely to buy articles and reclaim the costs from their department or their research grants.

But we detected in our interviews and focus groups another aspect of the “good enough” approach: if an article or book will take some time to obtain – and that time varies between disciplines – then some researchers will abandon the chase and go without.

The usual pathway followed to obtain an article not instantly available via a library subscription is much the same in sciences, social sciences, and arts and humanities:

- the scholar seeks access to the full-text, anticipating immediate and free electronic availability via the local library; if that fails
- tries Google to see if an Open Access version is available; if that fails
- emails the author or a friend in another institution with better library provision to see if they can email the article; if that fails
- orders article via inter-library loan; or
- consults a subject librarian for expert help

The difference between the disciplines is that some will press on through all steps while others only try some of them. As noted in Section 6.3, arts and humanities scholars have an information-pursuit timeframe that is longer than scientists', and they told us that if a book is genuinely considered to be important to their work they will wait months if necessary to lay their hands on it (and in general this still means it will arrive in printed form). Scientists, on the other hand, and especially those who work in the fast-moving fields, want information immediately, on their computer screen. We were told that waiting for two days for the supply of an article from the British Library is 'bearable but not ideal' for scientists in fields that move reasonably fast but not excessively so (the scientists we spoke to appeared unaware of the BL's ability to deliver within an hour, or unwilling to consider this option because of its relatively high cost). Cell and molecular biologists, in contrast, told us that "now means *in seconds*; I want it on my screen immediately". If the article cannot be supplied within such a very short timeframe, with a very few click-through steps, then the pursuit is abandoned.

Scientists thus adopt a pragmatic approach: if the article cannot be read – or at least located and requested – within minutes, it remains unread. For libraries trying their best to service the needs of their users, this poses a dilemma. No library can offer the level of provision that such scientists say they want (indeed, say they *need*). Yet despite this professed need, researchers go without rather than spend time and effort chasing an article deemed necessary. The result is information-deficit: researchers proceed with their work without having taken that information into account.

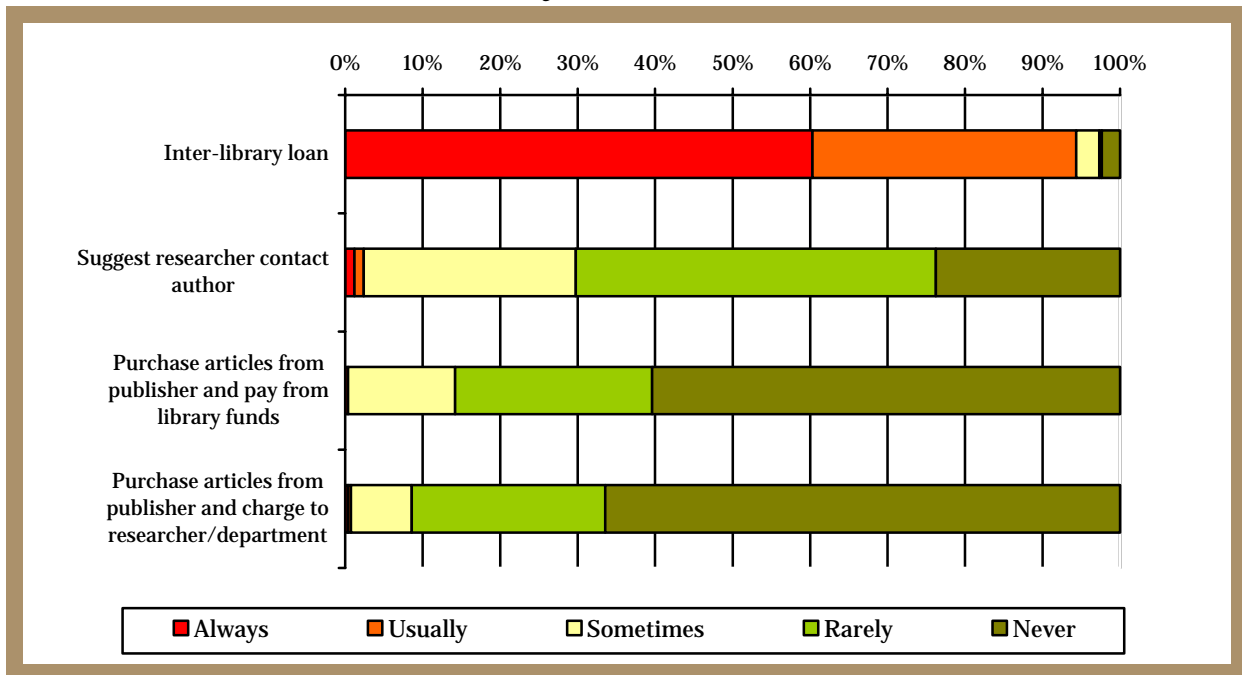
Finally, some of the researchers we spoke to described a degree of frustration that they feel when they cannot access an article they want, particularly when the failure appears to be for technical reasons. They feel that the library ought to have some mechanism in place to enable them to record this failure so that it may be remedied, perhaps, for the future.

### 6.6 *The rise and fall of inter-library lending*

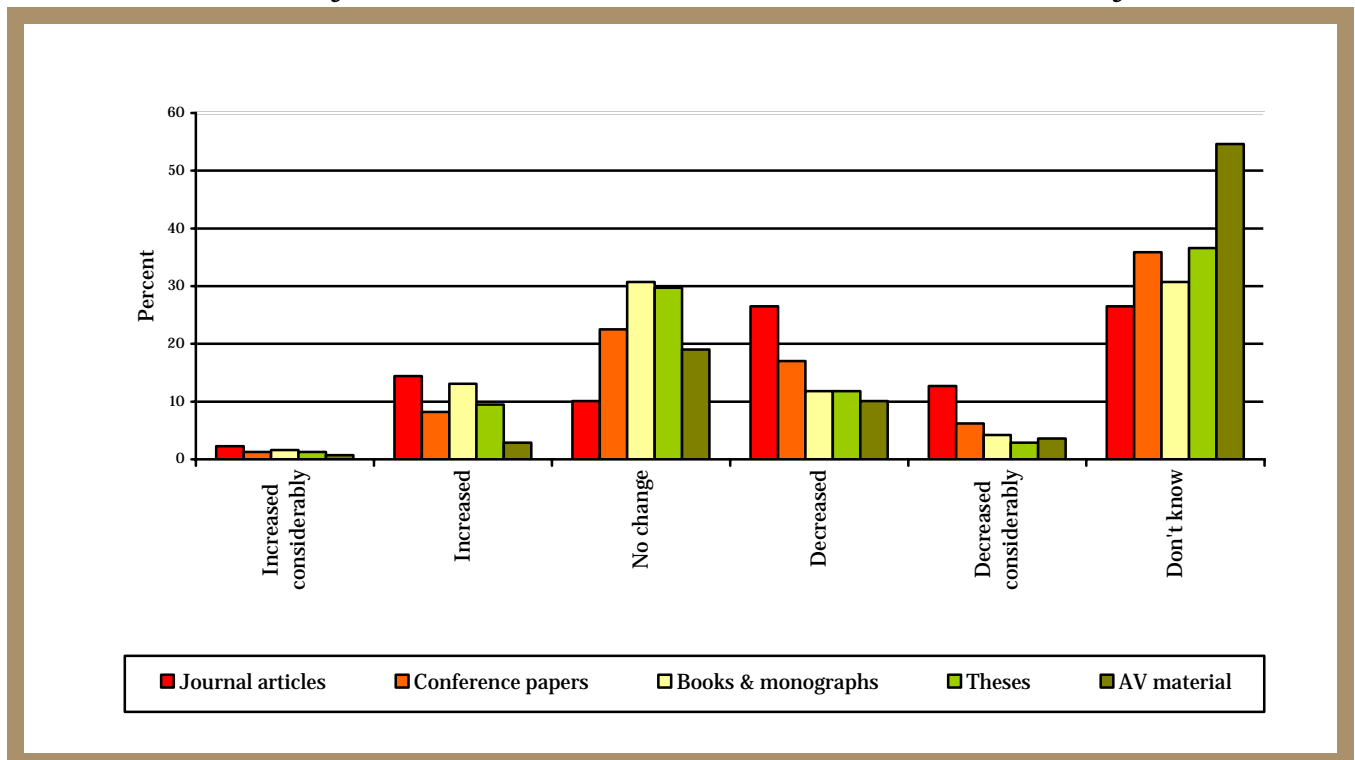
For librarians, as shown in Figure 18, inter-library loan (ILL) is by far the most important way for them to obtain for researchers articles to which their library does not subscribe.

To gain further insight into the current state of play with regard ILL, we asked librarians to assess whether the demand from researchers in their own institution for materials to be sourced by ILL from other libraries had changed in the last three years. The results are presented in Figure 19. Many of the librarians who responded weren't in a position to know, but for those that did the responses show a picture of no change or declining demand for ILL. The perception of the decline in demand for journal articles is particularly sharp: 26.5% say demand has "decreased"; a further 13% report that demand has "decreased considerably". For conference papers the figures point towards a gradual decline whereas for books and monographs, theses and audio visual material the overall picture is one of balance centred on a "no change" axis. As we note below, some specialist materials that are discoverable by Google are not easy to obtain, and this can pose challenges for librarians when they are asked to help.

**Figure 18: How librarians obtain articles for researchers from journals to which their library does not subscribe**

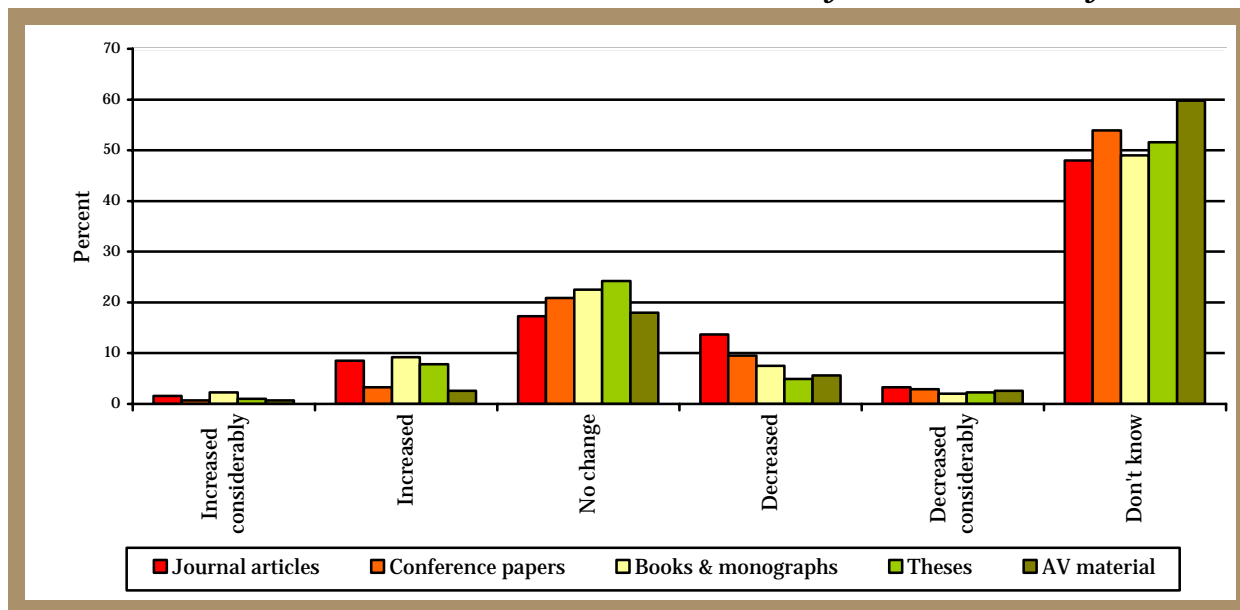


**Figure 19: Proportion of librarians reporting changes in demand from researchers for inter-library loan materials from other libraries in the last three years**



Librarians report a similar pattern in external demand for materials available in their own library, as shown in Figure 20. The proportion of librarians who report external demand for journal articles decreasing outweighs those who believe it to be increasing, while 17% say there is “no change”.

**Figure 20: Proportion of librarians reporting changes in demand from outside their institution for ILL materials from their own library in the last three years**



Researchers' comments reinforced this general notion that ILL has its place, but that it is not so central as it was a decade ago. They use ILL for material that is very difficult to find, rather than using it as the routine alternative when the journal or book required is not in the library's holdings. As librarians report, the outcome is that ILL is now largely used for the most elusive and esoteric of sources. Paradoxically, Google, whilst enormously extending researchers' ability to locate information, is also contributing to this problem. For it can discover articles or objects that researchers decide are important and desirable to have, but which can be extremely difficult to obtain: this leads to ILL requests which may be very hard to fulfil. The result is a growing service quality issue; and this may well worsen as the web-availability of easily-sourced material increases and what is left hidden away in hard-copy in remote stacks becomes the stuff of the ILL service.

The rise of interdisciplinary research, which we discuss in Section 7.4 is also having an effect on ILL, with similar implications. Librarians report that ILL requests can often be associated with a new need within their research community for information for interdisciplinary research, requiring articles from sources outside the boundaries normally associated with the research scope of a particular institution. Interdisciplinary research is also leading, in some institutions, to an increasing demand for non-'Western' material. And since the major full-text databases are skewed towards coverage of the Western literature, researchers must use bibliographic databases as discovery tools for non-Western literature, with a consequent demand for the full-text item to be delivered through ILL services.

Making a library catalogue available online can have a significant impact on ILL activity, particularly in the case of books or special-format material. One librarian, from an institution strong in visual and performing, reported that supplying audio-visual material is becoming more difficult. Other librarians also reported increases in requests for these kinds of material.



### **Key Points**

- The great majority of researchers use digital finding aids to find both digital and printed resources: only very small proportions of researchers, even in the arts and humanities, now pursue material through print catalogues
- To secure the best use of collections in future, libraries need to address cataloguing backlogs, and to ensure that high-quality metadata and digital finding aids are available for both their digital and printed resources
- Researchers adopt a variety of pragmatic approaches to overcoming barriers to access, and they may by-pass the library; but there is the risk that resources not immediately available will be overlooked and unread
- Formal inter-library lending will continue to decline in the medium term, and researchers will make increasing use of informal mechanisms for sharing information

## 7 New Ways of Working

### 7.1 *Introduction*

The past decade has seen substantial changes in how researchers work and in their attitude to information management. They have become used to managing digital resources and this has freed them to access and use information while in locations far from its source. Moreover, the very nature of digital technologies has enabled researchers to create and assemble information in new ways in the course of their research, presenting new issues to them and to their libraries. In this section we describe the new ways in which researchers are working and how this impinges upon library service provision.

### 7.2 *The use of digital resources*

Researchers' use of digital information resources is now habitual and they would like to see more provision of information in digital form. They appreciate very much the efforts that libraries have made in this area. They recognise that utilising the content of journals is now much easier than it used to be, and there is potential for a similar leap in utility with digital monographs and research texts. Indeed, researchers want more: they would like to see grey literature and special collections delivered in digital form too, mindful of the increased visibility, discoverability and usage this would bring. As we show below, however, they do not value the current provision of e-books very highly.

Over the past three years most libraries report that their provision of electronic journals, textbooks and reference sources has increased. Around 80% of librarians who responded to the survey reported increases in the provision of journals in science, technology and medicine, as well as in the social sciences. And 75% of librarians said their provision of journals in arts and humanities has increased too. These increases are not surprising given the widespread uptake of big deals which provide access often at marginal cost, to a wider range of journals than libraries previously subscribed to.

The increases are not confined to journals. The survey results indicate that the majority of libraries in the UK now offer electronic versions of textbooks and reference sources: 73% of respondents reported an increase in provision of electronic textbooks and 72% an increase for reference sources during the past three years. In contrast, just 44% said that provision of special collection material has increased during the same period.

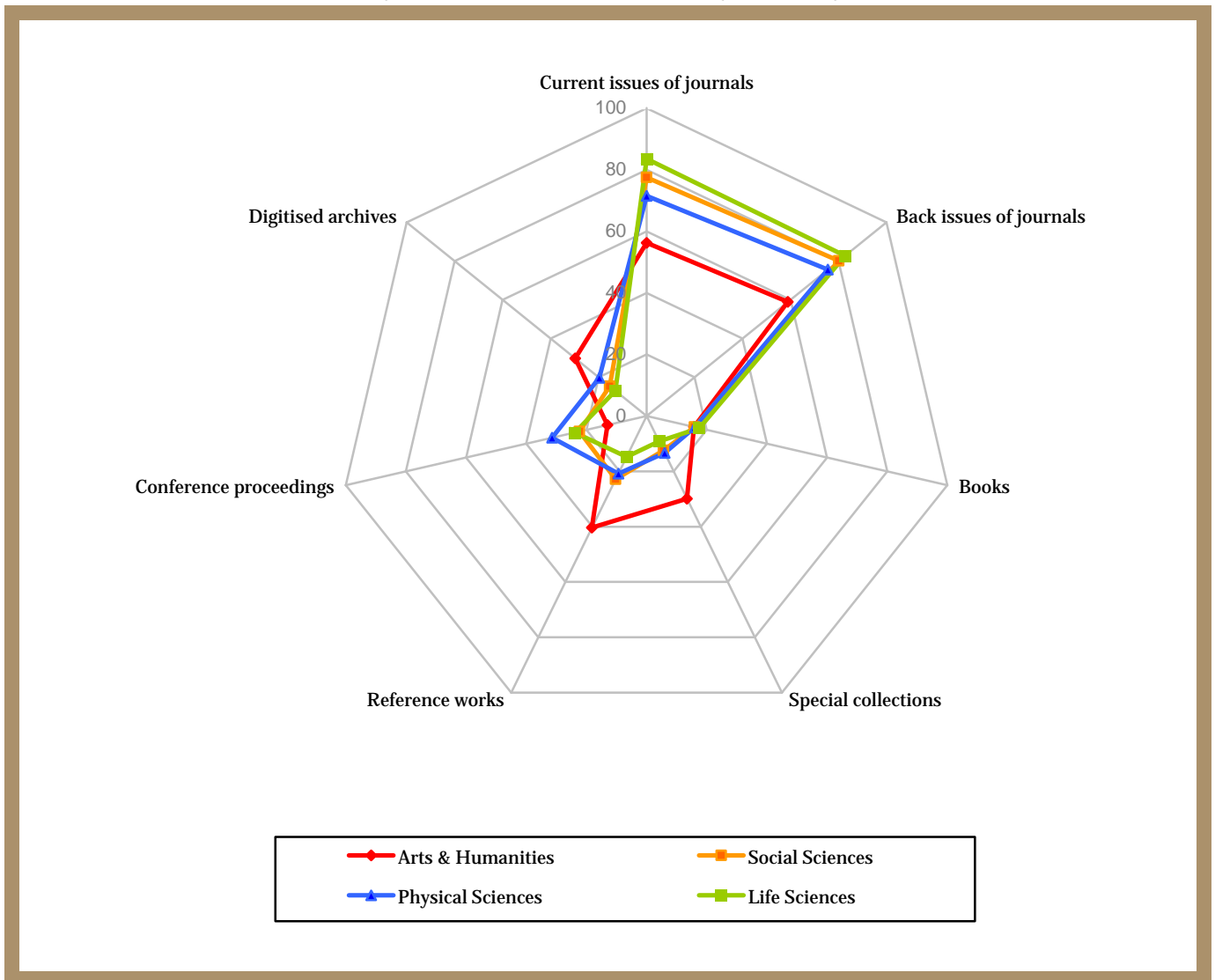
The increase in provision of electronic journals tallies with how researchers currently access the information they need: 73% of respondents think the availability of current issues of electronic journals is "very useful", along with 75% of them who think similarly about the availability of electronic back issues. It is worth bearing in mind that the question to which these results relate specifically asked about electronic journals *provided by your institutional library* rather than about researchers' views of the usefulness of electronic journals *per se*. Only a handful of researchers reported not finding access to electronic journals to be useful, and it is reasonable to conclude that electronic journals occupy a central position in the portfolio of electronic resources provided by librarians.

It is commonly said nowadays, with reference to scholars' information-seeking and use behaviour, that unless something is available in digital form it is invisible. This study did not entirely support that notion, but researchers told us that they would ideally like to be able to find everything they need in digital form. The ideal is unlikely to be fully achieved in some areas, but in most it is not unimaginable. Scholarly publishers, libraries and other agencies continue with digitisation programmes, and

tomorrow's scholars, especially in the sciences, will find that the bulk of what they need – or think they need – can be provided digitally. For many this is already the case.

Figure 21 presents researchers' views of the value of a variety of electronic information resources. It shows that broadly similar proportions of life, physical and social science researchers find current and back issues of electronic journals to be "very useful". Only in the arts and humanities is the percentage significantly lower. Researchers in all disciplines tend not to value the usefulness of electronic books and other resources very highly. There are, however, some disciplinary differences: fewer life science researchers than those in other disciplines value digitised special collections and electronic reference works; and physical science researchers are more likely than other researchers to find conference proceedings useful. But the most notable difference in the perceived usefulness of electronic information resources is exhibited by arts and humanities researchers, more of whom rate as "very useful" special collections, reference works and digitised archives than those in any other discipline.

**Figure 21: Percentage of researchers who rate different kinds of digital resource provided by their institutional library as "very useful"**



### 7.3 *Large-Scale Collaborative Research and its Impact*

In addition to the 'long distance' researchers discussed in Section 5.5 (those who choose to live – and often carry out much of their work – at a distance from the employing institution), libraries are also having to address the rapid growth in collaborative, cross-institutional, research projects. Librarians discussed with us the challenges they are now starting to face as 'big science' takes root, involving very large collaborative projects which may have a global spread. And even 'small-to-middling science' often involves teams in more than one institution. This is not limited to science, of course: social science and humanities projects may be set up on the same basis although not on the scale seen in the sciences.

Commonly, the members of such collaborative teams are widely-spaced geographically and collaboration may be achieved virtually, using digital technologies for the generation and storage of experimental data and for communication within the team. In Scotland, the Scottish Funding Council has initiated a scheme to pool research from different institutions, and so far it has funded seven such pools. Research teams working on a project may be located at two or more Scottish universities with significant distance between them. As these teams create their data in electronic form, sharing results is simple: the problems are with the provision of information services at project level. It is difficult for librarians to follow what is happening with such pools, and even when they can see how they are working on the ground, there are problems to resolve. The libraries of the universities involved naturally differ in their holdings, so that some journals available at one may not be at others where project partners work.

Libraries can respond to such problems by making pool researchers associate members of the other libraries involved, but this can bring new issues with publishers over the terms of site licences. This is a relatively new phenomenon and the questions it raises have not yet been adequately addressed. It is clear that some measures must be put in place so that libraries can be better involved in research pool programmes from early on in the planning, in order that they can take the necessary steps for proper information provision for these programmes. This echoes to an extent some of the discussion in Section 4.7 on improving access to research information.

### 7.4 *The rise of interdisciplinary research*

Just as collaborative projects across institutions present libraries with some new problems, so does the growing importance of interdisciplinary research. For some years now it has been clear that the boundaries between traditional research disciplines are increasingly blurred. The Research Councils, for example, have funded in recent years a number of cross-Council programmes which operate across the boundaries between their respective disciplines, and there have been some very promising and important results. Anyone keeping a watchful eye on new scientific developments cannot but be impressed by the rise of interdisciplinary work: researcher responses to the discovery services study<sup>9</sup> indicated that 38% are working in interdisciplinary areas. Life scientists working at the molecular or nano-level now need the skills of mathematicians or physicists or chemists or engineers to answer the new questions their work is throwing up. Similar approaches are gaining ground in many fields as the big questions become harder to answer.

For libraries this presents new challenges. Interdisciplinary teams have new needs. No longer do people working in the mathematics department simply need mathematics journals. Life scientists may want to see physics texts. And the difficulty of working out what titles will be appropriate for researchers working in cross-disciplinary fields is made worse because the researchers themselves often find it difficult to say accurately *what they themselves* need to see and use. Defining a suitable set of journals

that will contain everything a researcher working in an interdisciplinary field may need is impossible. With potentially-useful articles spread across many more journals than in a single-discipline research area, interdisciplinary researchers often find serendipity in play in locating information relevant to their research. Librarians report that this manifests itself in protests from unanticipated quarters when subscriptions are cut: a life science journal little used by life scientists may seem ripe for cancellation, but such cancellation may bring unexpected complaint from the physics, chemistry, mathematics, or engineering departments.

As we discussed in Section 6.6, the rise of interdisciplinary research can also have implications for the use of inter-library lending services.

### 7.5 *e-Research and libraries*

The UK's e-Science Core Programme has been recognised as a world leader in setting out the opportunities created by e-research<sup>23</sup>, and actively facilitating it through the creation and development of a range of e-research tools. Managed on behalf of RCUK by the EPSRC, the Core Programme did not at first include funds for the information management challenges posed by e-research, but the second phase of work included the creation of the Digital Curation Centre, co-funded with JISC.

It is the data management issues around e-research that are of most interest to librarians, and of increasing interest to researchers as they start to understand the need for data to be actively managed. In many fields, e-research means the re-use and annotation of data, as well as its storage and preservation, and this indicates the need for the development and use of new metadata formats, as well as the ontologies that help to structure and organise the data and its retrieval.

Is this a job for academic librarians? The survey data provide mixed messages on this point (see Sections 8.8 below). Many librarians see data curation as a natural extension of their current role, but there is also evidence of caution in terms of the curation of large-scale datasets linked to e-research. Some of the most successful existing large-scale data repositories operate successfully on a national or international scale. Examples of the former include the data centres operated by NERC; the European Bioinformatics Institute (EBI), which operates several molecular biology databases, is an excellent example of the latter. The key issue here is scale: the EBI has a larger budget (some €22M), and a larger staff, than most university libraries.

The NERC and EBI examples are the exception rather than the rule: many disciplinary areas lack the data curation facilities to enable them to exploit fully the potential of e-research. Late in the course of this research, a report was published on behalf of the Office of Science and Innovation (OSI) entitled *Developing the UK's e-infrastructure for science and innovation*<sup>24</sup>. This makes clear that significant investment in the national e-infrastructure is needed if the UK is not to lose its early lead in e-research, and that provision for information and data management is a key part of such an infrastructure.

The part that academic librarians can and should play in this remains unclear, not least because few of them appear to have been approached by e-researchers with requests to manage data. CURL and SCONUL have established a joint Task Force to look at this issue, and while its work is at an early stage, it is focussing on raising awareness and understanding of e-research among librarians so that they can provide *advice* to researchers on the data management aspects of their projects. In terms of the provision of data curation *services*, however, the picture is less clear. The scale of the required

<sup>23</sup> E-research may be characterised by its data-intensive, IT-based, and collaborative features. It is also becoming increasingly international, as the grid and associated middleware facilitate collaboration across national boundaries, and is rapidly colonising the social science and humanities areas. In the US, the term "cyberinfrastructure" is used to describe the technologies that underpin e-research.

<sup>24</sup> See <http://www.nesc.ac.uk/documents/OSI/report.pdf>.

infrastructure investment is not the only issue: it also requires a specialist workforce with a combination of advanced subject knowledge and informatics skills. This is a subject of which the present study only scratched the surface. It will undoubtedly become a more important issue over the next decade as more and more research becomes data-intensive, and e-research becomes mainstream.

#### **Key Points**

- Electronic journals are very highly valued by researchers in all disciplines, but as yet they attach a lower value to libraries' current provision of other kinds of digital resources
- Increases in the scale of research and the growth of collaborative and interdisciplinary research projects present challenges to libraries in seeking to provide effective services and equitable access to resources for all members of collaborative teams
- The growth of e-research and virtual research communities has implications for how libraries can support researchers in the future. Some groups of librarians are beginning to address these issues
- There is a need for greater clarity as to the roles and responsibilities of all those involved in the research cycle – researchers, research institutions, and national bodies, as well as libraries – in managing the increasing volumes of digital research outputs

## 8 New Ways of Providing

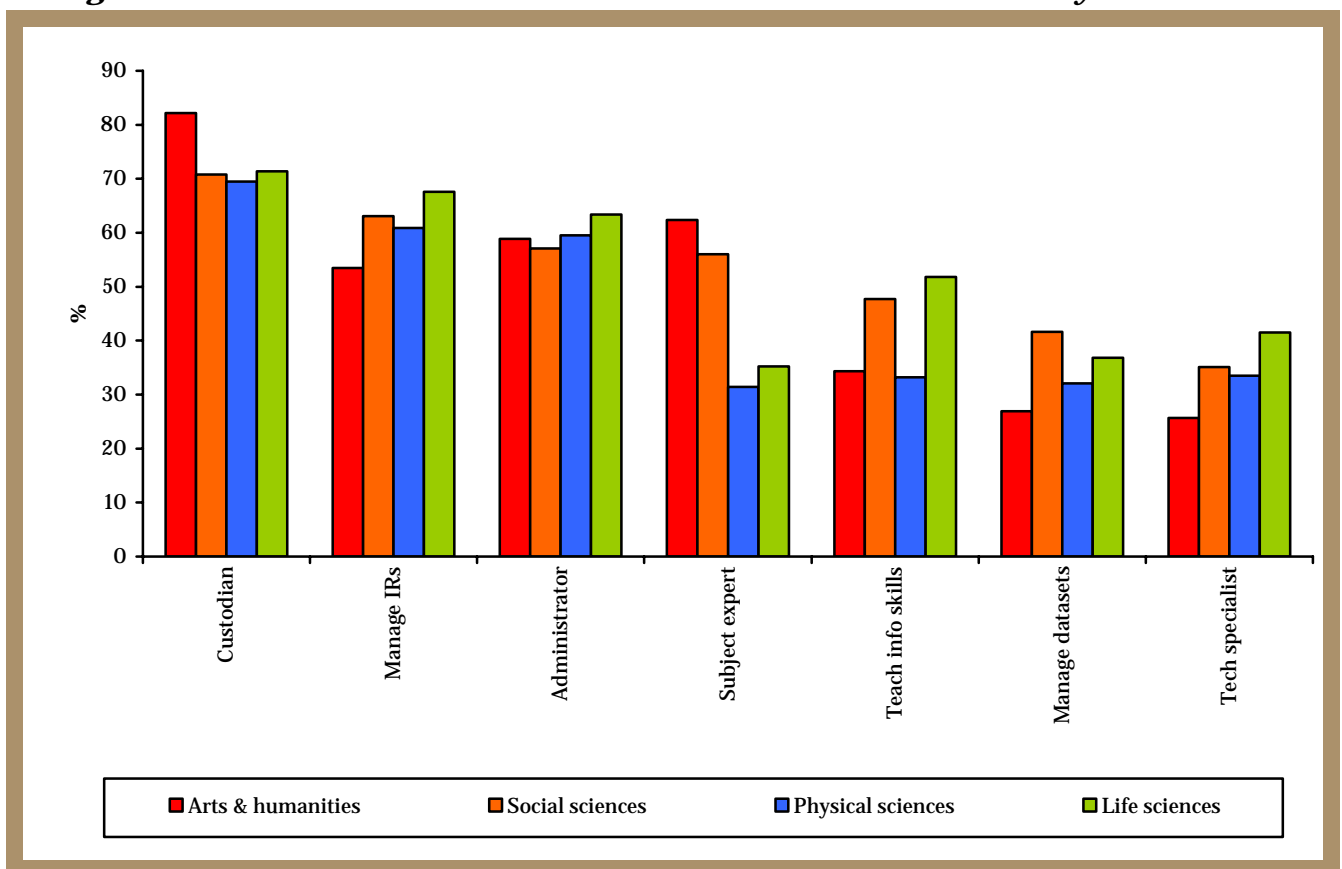
### 8.1 Introduction

As the ways in which researchers work evolve, so their expectations of the services provided by libraries and librarians are evolving too. Librarians also have expectations of their own and face a perpetual challenge to ensure that the services they provide align as neatly as possible with the new and diverse needs of researchers. Questions as to the role librarians will play in the future were explored using the questionnaires, but in addition during the focus groups, where we discussed this topic at length with researchers and librarians. There are some new challenges for librarians, including the need for continuing professional development as libraries change both in the services they provide and in the roles that librarians assume. This chapter explores some of the factors involved.

### 8.2 Researchers' views on the roles of librarians in the future

In the survey we asked researchers for their views of the relative importance in five years' time of the roles of librarians. A list of 13 options was provided ranging from activities librarians currently undertake, such as custodianship of collections and special collections, to activities which librarians may conceivably undertake in the future. The proportions of researchers identifying the seven most highly ranked roles are presented in Figure 22.

**Figure 22: Researchers' identification of core roles for librarians in 5 years' time**



■ **Custodian** of print-based and digitised archives and special collections.

Overall 72% of researchers believe that, in five years time, one of the core roles for librarians will be that of information custodian. Just 2% of researchers think this will not be a role for librarians. Relatively high proportions of researchers in all four broad disciplines believe librarians will continue to be custodians of print and digitised collections. That over 80% of researchers in the arts and humanities take this view is not surprising given the importance of special collections for their work.

■ **Manager** of institutional repositories of digital information

In spite of the current low take-up of institutional repositories, 61% of researchers believe that the management of such repositories will become a core role for librarians within five years; and an additional 25% think it will be an ancillary role. Only 6% think librarians should not be involved with the management of institutional repositories. But we would add the caveat that, as discussed in Section 9, relatively few researchers are yet aware of what institutional repositories are, and their main aims and functions. Awareness is highest in the sciences, where researchers have adopted the self-archiving habit earliest, and lower in the other disciplines. Those who *are* aware of the repository in their institution will tend to be aware of the role of the library, since in all cases in the UK it is the institution's library that has initiated and manages the institutional repository. It is thus quite natural for these 'aware' researchers to assume that this responsibility falls more naturally to the library than to any other entity on campus. Nevertheless, it is notable that so many of them think it will be a *core* role. We may anticipate that as more scholars in other disciplines become aware of repositories and their functions, they will also see this as a core area of activity for the library in the future.

■ **Administrator** dealing with the purchasing and delivery of information services.

While researchers do not necessarily associate the services provided by their institutional library with the information they access from their desktops, 59% of researchers see the administration of information services as a core role for librarians into the future. There is little variation in this view across the four broad disciplines.

■ **Subject-based information expert.**

The survey results indicate that a good proportion of researchers continue to value the role librarians play in offering subject-based expertise from their base in the library: 46% of researchers believe this will be a core role for librarians in five years time while a further 33% think it will be an ancillary role. Figure 22 shows, however, that these views vary significantly according to discipline: proportionately more researchers in the arts and humanities and social sciences value the subject-based expertise of librarians than do researchers in the sciences – by a sizeable margin.

It is worth noting here that a significant - though smaller - proportion of researchers (not shown in Figure 22) envisage subject-based information experts from the library being embedded in departments or research groups: 25% of all researchers think this will be a core role in the future and 35% think it could be an ancillary role. On the other hand 26% believe this will not be a role for librarians, while 10% don't know. Some of the librarians we spoke to believe that the increasingly-specialised demands of research may mean that the role of 'research librarian' could grow. They foresee a time when such librarians spend most of their working lives in the subject communities they serve, working alongside researchers on projects or in advisory role that is carried out within the community.



The role and location of subject and research librarians is clearly a matter that needs to be discussed further between the library and research communities. There are already moves in the US towards much greater cooperation between subject librarians and their constituencies, and a role for librarians in the joint execution of special projects that underpin and enhance research efforts in their fields. The researchers we talked to frequently expressed the opinion that their subject librarian fulfilled a vital role in their working lives. Currently, this is almost invariably done from the library, and librarians are in the main consulted rather than proactively going out to the researchers in their subject (at least according to the researchers); but ensuring effective lines of communication is critically important, and will grow in importance in the future.

■ **Teacher** of information literacy and related skills.

Most researchers agree that librarians will continue to play an important role in teaching information literacy and related skills: 42% believe this to be a core role while a further 39% think it will be an ancillary role for librarians. Just 11% said such teaching is not a role for librarians. We heard from researchers that their library provides good formal training programmes in information management and that researchers are encouraged to pursue them, indeed are expected to in most cases when they begin as a research student or upon being appointed to the institution in a junior research role. It should be noted here that librarians report only a 'moderate' take-up of such schemes. Nonetheless, researchers expressed satisfaction with what they were taught and found it a valuable experience. Some of them said they would appreciate training beyond induction-level, describing what they were after as 'learning more of the tricks of the trade'. This finding, and those reported by the RIN discovery services study<sup>9</sup>, suggest that the training offered to established researchers should perhaps be differentiated from that offered to undergraduates or Masters students, with a sharper focus on the specialist needs and practices of researchers in different disciplines.

■ **Manager** of the vast datasets generated by e-research and grid-based projects.

As the digital output of e-research and grid-based projects increases, so will the need to manage the resultant datasets. Just over one third of researchers think managing these datasets should be a core role for librarians and a further 27% think it should be an ancillary role. A total of 62%, therefore, believe librarians have a part to play whereas 21% think managing these datasets is not a role for librarians, and 14% don't know. Support is highest among social and life scientists. Many librarians, too, consider this will be a core role for them. As yet the demand for their help has been limited, and some express caution as to the availability of the necessary skills and resources to enable them to provide effective data curation services.

■ **Technology specialist** facilitating electronic access to information resources.

Although 20% of researchers think this is not a role for librarians, the majority do: 37% believe librarians have an ancillary role to play in facilitating electronic access to information resources, while 34% believe this to be a core role. For the purpose of the survey we had to be economical with the descriptor, hence the term 'facilitating electronic access to information resources'. But we probed the issue further in interviews and focus groups. In general, it seems that the role of 'systems librarian' is disappearing, largely because information technology is now so much a part of library business that many individuals within libraries have taken on a substantial systems role. People who originally filled the role of systems librarian have become more specialised and expert in specific aspects of library systems work. The term, 'digital library integrator' is appearing: it denotes someone who is steeped in library operations and requirements on one hand and can relate those to the needs of the research community on the other. They may grow to have an important role in supporting researchers.

These seven areas of library expertise – custodian of collections, repository manager, administrator of information management within the institution, subject-based information expert, teacher of information management skills, dataset manager and technology specialist - are those seen by researchers as the most important for the future. As well as these, the survey points some more technical functions where researchers believe librarians have a part to play. For instance, 48% of researchers think librarians should be involved with supporting the technical aspects of information provision (such as network support and authentication); and 46% think librarians are well positioned to offer services as technology specialists, creating and managing Virtual Research Environments (VREs) in support of Virtual Research Communities (VRCs), though only 14% see this as a *core* role.

As well as these technical functions, there is a good deal of support from researchers for librarians to perform other roles, such as offering specialist advice on copyright and other intellectual property rights issues: 30% think this should be a core role for librarians and a further 44% think it should be an ancillary role. There is also strong backing for librarians to support Virtual Learning Environments (VLEs), facilitating the process of e-learning: 24% believe this should be a core role and 40% think this should be an ancillary role for librarians. Finally researchers believe that librarians should be managing metadata issues, developing and applying ontologies. Although many researchers (28%) don't know what this role might entail, 17% think it should be a core role and 32% think it should be an ancillary role for librarians.

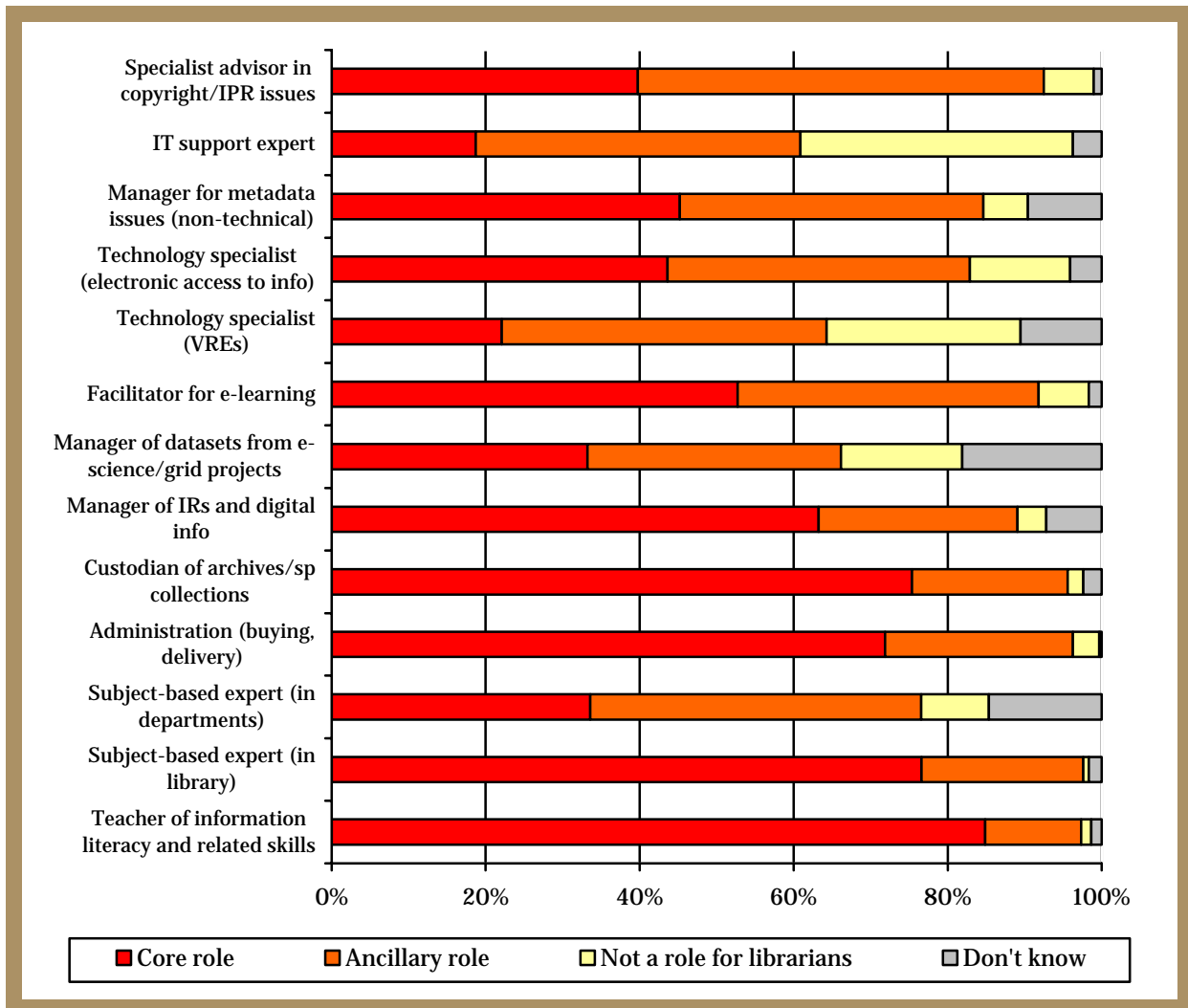
The survey of researchers thus points to a number of technical and non-technical roles that researchers think will be fulfilled by librarians in five years time. These results provide an important glimpse of the expectations researchers have of librarians and the roles they could play in the near future.

### 8.3 *Librarians' views of their future roles*

Having looked at researchers' perceptions of the role of libraries in the future, we report here on the views of librarians themselves as to what sorts of roles they might call their own in five years time. The results shown in Figure 23 indicate that the core roles librarians currently undertake will still be core roles in five years time. These include administration, negotiating the purchase and executing the delivery of information resources, serving as custodians of archives and special collections, offering subject-based expertise, and teaching information literacy and related skills. But there are in addition a number of additional roles that librarians are interested in developing: providing specialist advice in copyright and IPR issues; managing non-technical metadata issues; acting as technology specialists in facilitating access to electronic resources; and – most importantly – managing institutional repositories of digital information. With respect to copyright advice, some libraries already employ specialist lawyers; others told us that they had taken the role into the library from other places (e.g. the registry) where it had previously resided.

There are also some roles that librarians are more reluctant to own, except at an ancillary level, these being the primarily technical tasks of supporting information technology systems (including networks and authentication), providing the technical skills to create and manage Virtual Research Environments, and managing the vast datasets generated by e-science and grid-based projects.

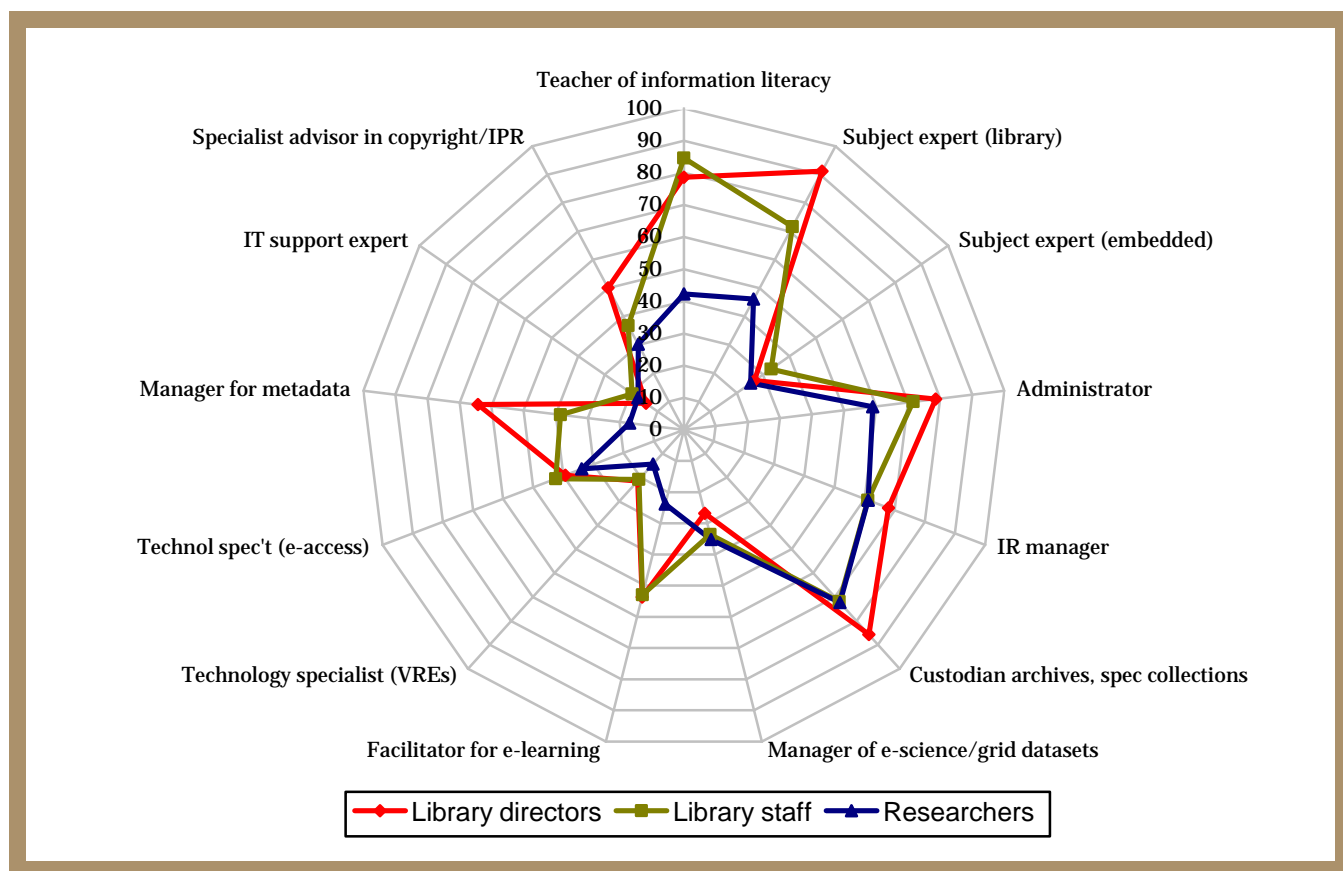
**Figure 23: Librarians' views on the evolution of library roles**



We have disaggregated the results from the survey into two groups: library directors and all other library staff, and we present the views of the two groups alongside those of researchers in Figure 24. As this shows, the views of library directors and their professional colleagues are broadly congruent except for two key areas. First, more library directors than other librarians think libraries have a core role to play in managing non-technical metadata issues. Second, more directors believe subject-based expertise offered in the library will be a core role for librarians in five years time.

Perhaps more significant are the similarities and differences between the views of researchers and librarians. They agree in seeing librarians' core roles as being closely linked to the administration of information services, the custodianship of archives and special collections, and the management of institutional repositories of digital information. They also agree in *not* seeing core roles for librarians as including IT support, specialist support for Virtual Research Environments, subject-based experts embedded in departments or research groups, or the management of datasets produced by e-science and grid-based projects. They differ significantly, however, in four key areas. Thus the great majority of librarians see teaching information literacy and offering subject-based expertise as core roles for them, and central to what they do; researchers are generally supportive, but more equivocal about whether these are core as distinct from ancillary roles for librarians'. There are also some differences of view as to whether managing metadata issues and facilitating e-learning should be core roles for librarians: relatively few researchers think this should be so compared with the figures for librarians.

**Figure 24: The relative importance of librarians' roles in 5 years time: the views of library directors, other library staff, and researchers (per cent)**



#### 8.4 *Researchers' and librarians' perceptions of different resources*

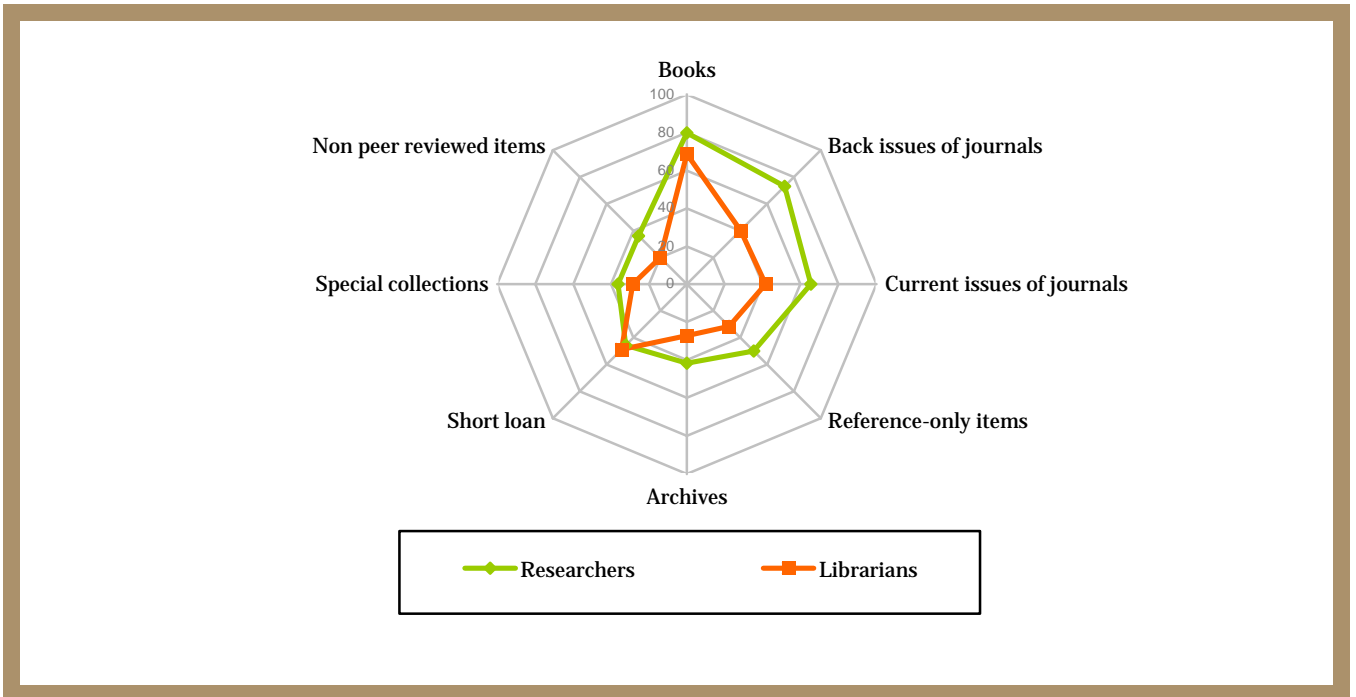
We have also compared the views of researchers with those of librarians with regard to different types of information resources (in both format and content). The researchers' survey asked about the extent to which they find different resources useful while the survey of librarians asked about the extent to which these resources are used. Although the questions asked are different – perceived usefulness and perceived frequency of use – they are complementary and the closer the match between information resources that researchers perceive to be useful for their work and the degree to which librarians report those resources are being used, the greater the efficiency of the library.

For print information resources, Figure 25 indicates that the views of both groups are in broad alignment except for journals, where usefulness, as perceived by researchers, appears not to translate to actual use to the same degree as for the other categories of print information resource.

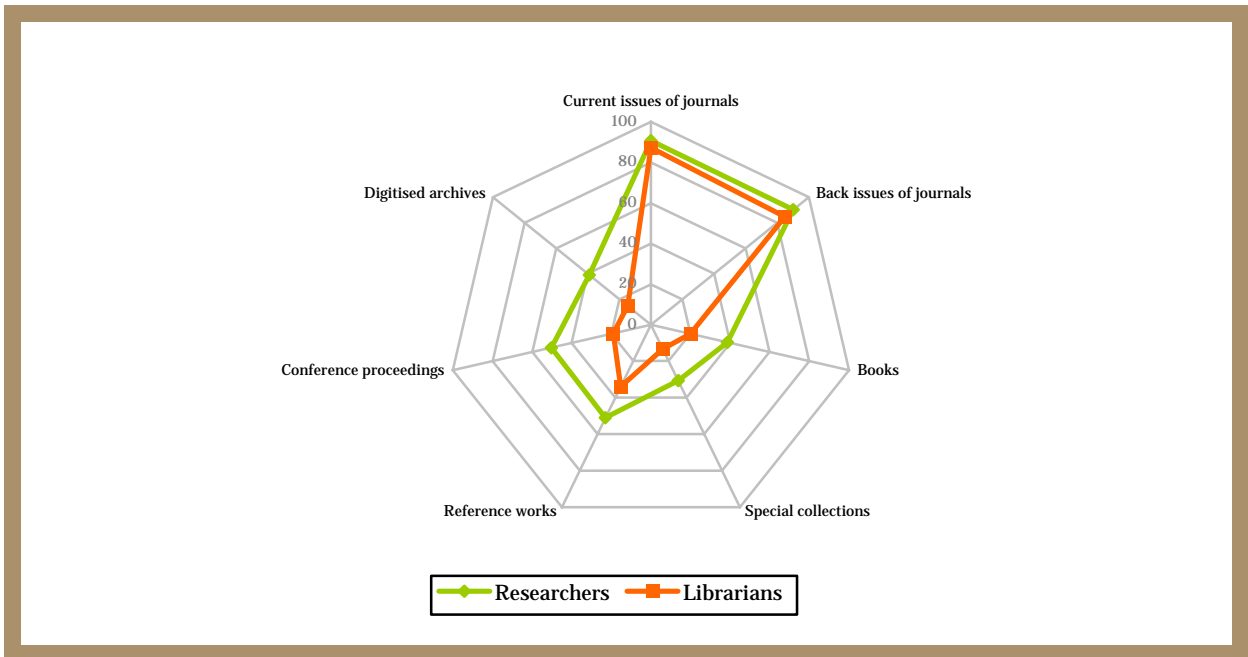
For electronic resources, again the patterns of perceived usefulness and perceived frequency of use are in overall agreement except for conference proceedings and digital archives, where Figure 26 shows that researchers' perception of their usefulness diverges significantly from librarians' views of the extent to which such resources are actually used.

**Figure 25: Percentage of researchers who rate print information resources provided by their institutional library "very useful" or "useful" compared with the resources**

***perceived by librarians to attract "very heavy" or "heavy" use***



***Figure 26: Percentage of researchers who rate electronic information resources provided by their institutional library as "very useful" or "useful" contrasted with the resources perceived by librarians to attract "very heavy" or "heavy" use***

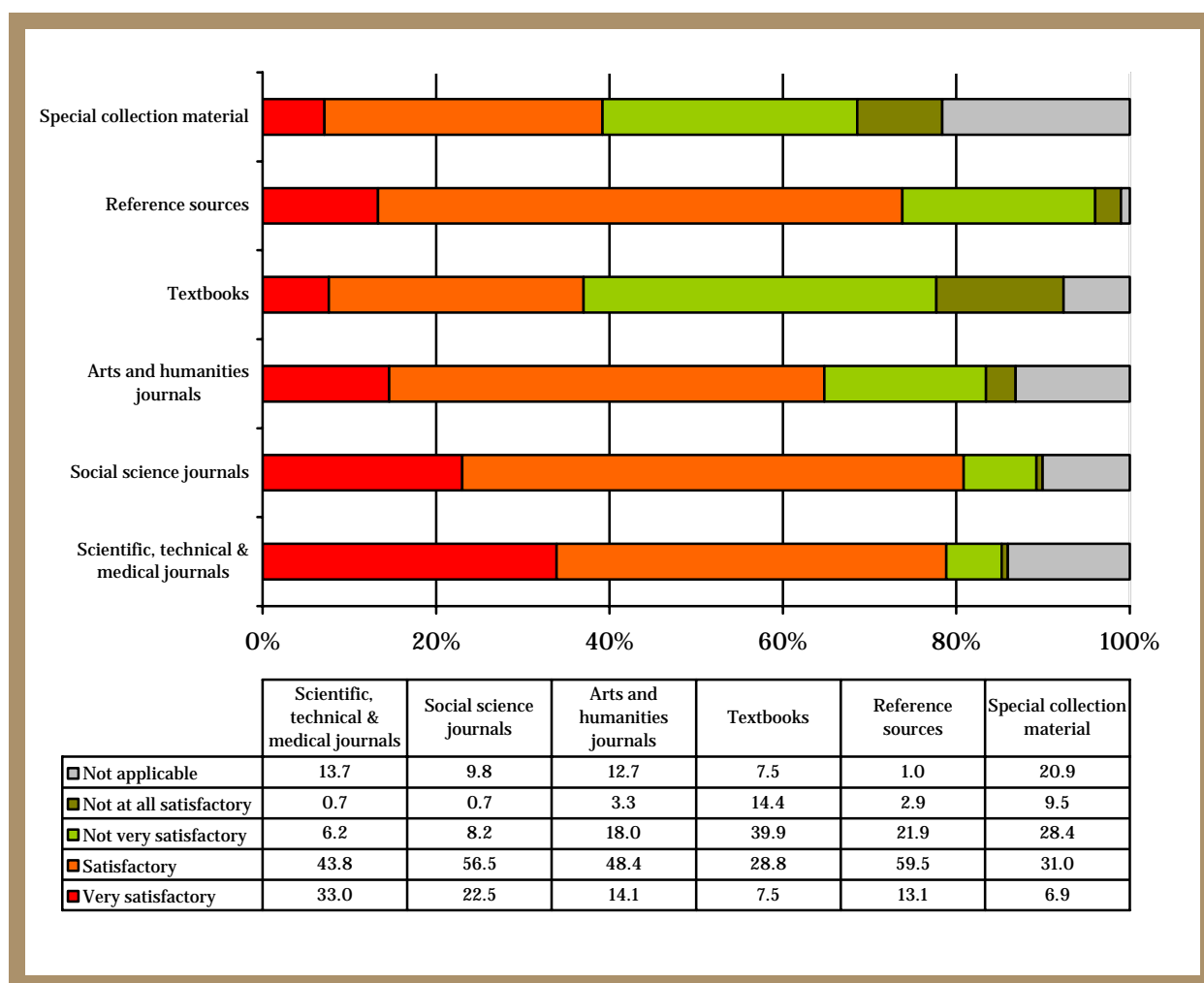


### 8.5 Librarians' perceptions of their provision of electronic information resources

Although libraries' provision of the electronic versions of journals, textbooks, reference sources and special collection material has increased over the past three years, the survey indicates that librarians believe there is more to be done. As Figure 27 shows, 33% of librarians are very satisfied with their provision of scientific, medical and technical journals, and there is also a good level of satisfaction with the provision of social science journals, but the satisfaction ratings for other kinds of resource are lower. Over 21% of librarians are dissatisfied with their provision of journals in the arts and humanities. And e-books appear to be a particular problem: 54% of librarians are dissatisfied with their provision of electronic textbooks<sup>25</sup>. There is also explicit recognition by 38% of librarians that the provision of special collection material in electronic form falls short of what they consider satisfactory.

These figures highlight types of resources that librarians would like to offer to a more satisfactory level. Current provision falls short of the ideal not always as a result of limited funding, but also because of limited availability. As noted earlier, for 48% of librarians the availability of digital versions of material previously available only in print is a strong driver in the process of acquiring new resources.

**Figure 27: Librarians' satisfaction with their provision of electronic resources**

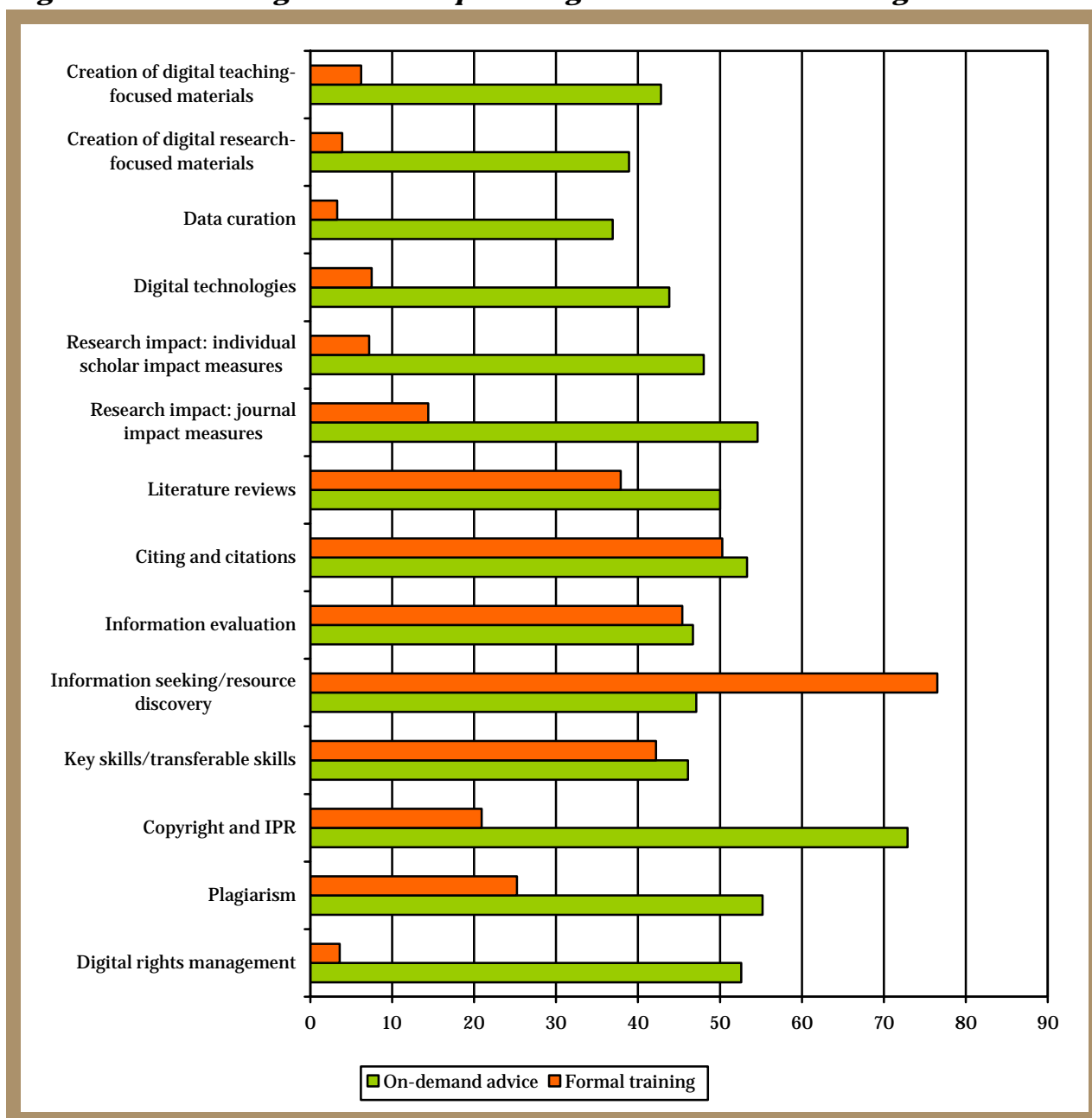


<sup>25</sup> This is an issue that may be addressed by the e-book observatory project recently announced by JISC. See <http://www.jiscebooksproject.org/>.

### 8.6 Library-based provision of advice or formal training to researchers

Librarians were asked in the survey about their provision of advice or formal training to researchers and the results are presented in Figure 28. It shows the areas on- where UK academic libraries believe they possess the skills and knowledge to be able to provide advice and training. The areas where over 50% of libraries offer such advice are digital rights management, plagiarism, copyright and IPR, citing and citations, literature reviews and journal impact measures. The top scoring subject is copyright and IPR where 73% of librarians said that they provided advice on behalf of their institution on-demand.

**Figure 28: Percentage of libraries providing advice or formal training to researchers**



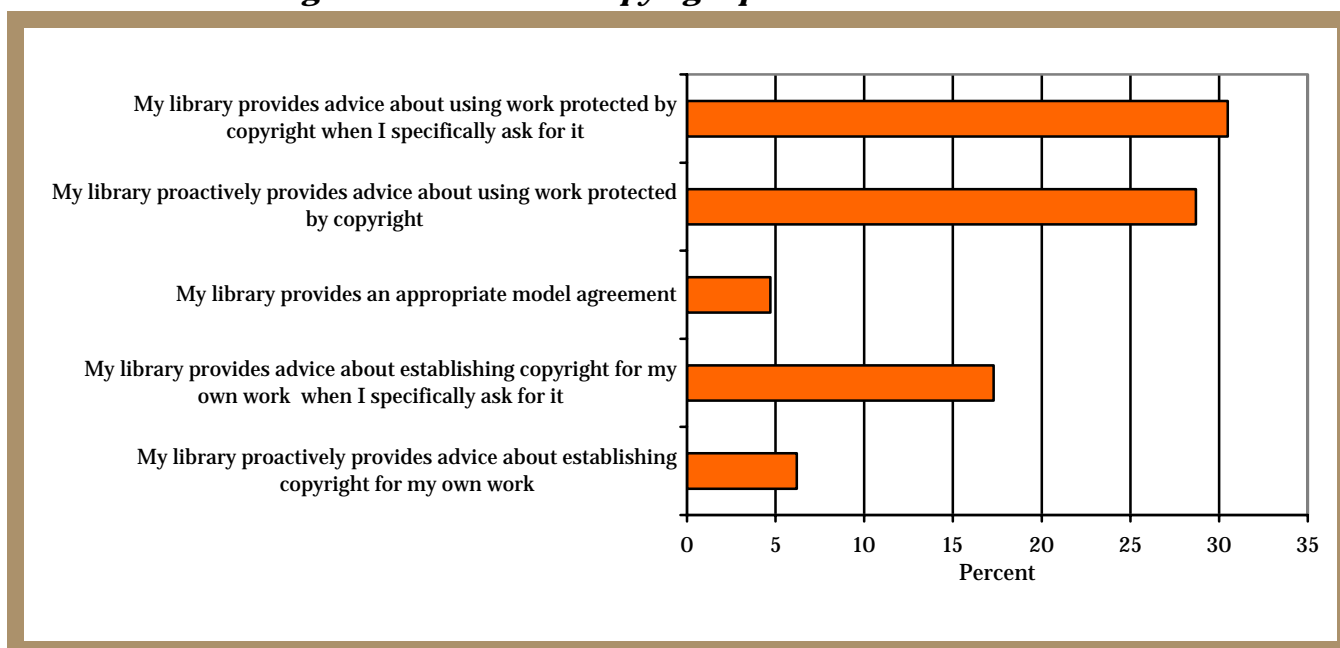
In contrast to this provision of on-demand advice for a very wide range of subjects, formal training offered by libraries focuses on just a few areas. The area that stands out is information seeking or resource discovery (including database training), where 76.5% of librarians report that their library



offers formal training. In addition, 50% of librarians say their library provides formal training on citing and citations, 45% on information evaluation, and 42% on key skills or transferable skills; but beyond these subject areas formal training is much less commonly provided. There may be many explanations for the disparity between the provision of on-demand advice and of formal training; but libraries must be clear as to their roles in these areas, and as to the resources and expertise they have to offer.

Take the case of copyright and IPR. As noted in Sections 8.2 and 8.3, researchers and librarians both see the provision of advice in this area as an important role for libraries, and it is the highest scoring subject for the provision of on-demand advice. But only 21% of librarians say their own library offers formal training on this subject to researchers. And as shown in Figure 29, only 6% of researchers report that their library proactively provides advice about establishing copyright for their own work, while 17% say their library provides such advice on request. As to advice about *using* work protected by copyright, however, 29% of researchers say that their library proactively provides such advice, and 30.5% say it is provided on request. It appears that libraries provide more advice – proactively or reactively – on the subject of using work protected by copyright than about helping researchers understand about copyrighting their own work. We discuss the role of libraries in promoting and facilitating open access in Section 9, but here it is useful to report that some universities – often through their libraries – are taking steps to educate and inform their researchers about copyright, including the retention of their own copyright in their published works. In at least one institution, a model licence-to-publish has been devised by the library for researchers' use when publishing journal articles. These initiatives are in their infancy and there is much work ahead for libraries in this regard.

**Figure 30: Advice on copyright provided to researchers**



### 8.7 *Library-based provision of skills development for researchers*

Following the Roberts Review of 2002 a number of areas were identified as important for the skills and career development of researchers. The librarians we spoke to during the course of this study generally agreed that they are overseeing an increase in key skills training, particularly in shepherding researchers through the process from simple information management to information dissemination. This is not without its problems: in some cases, faculty members are said to have seen this as a library



intrusion into the research student – supervisor relationship: it is unclear how a library's training programmes might subvert this relationship, but it was reported by several librarians during the course of this study<sup>26</sup>. It is clearly a sensitive issue that requires careful handling.

Librarians emphasise that their aim is to develop transferable skills in their research community, and in many cases considerable effort and resource has gone into developing sophisticated courses and programmes, with seminar series, video-on-demand and other on-line learning resources available from libraries. In part, these have been designed to satisfy the needs of researchers working remotely, but they also serve the needs of local researchers who wish to enjoy skills training at their own pace or at times to suit themselves. Many libraries have produced excellent sets of resources for this purpose.

All the librarians we spoke to said that they provide training in commonly-used software packages such as bibliographic management tools, teaching researchers how to get the best from these products. The library formally supports the software. There is a high level of demand from research staff and research students for this training and courses are said invariably to be full.

In our surveys, we set out to discover whether researchers believe library professionals are well positioned to deliver the coaching required, and whether librarians themselves believe they have a role in delivering this kind of service to their institution's research community. We asked researchers and librarians: "Do you believe library staff should have a role to play in teaching and developing researchers in various aspects of Academic and Professional Practice during the next five years?"

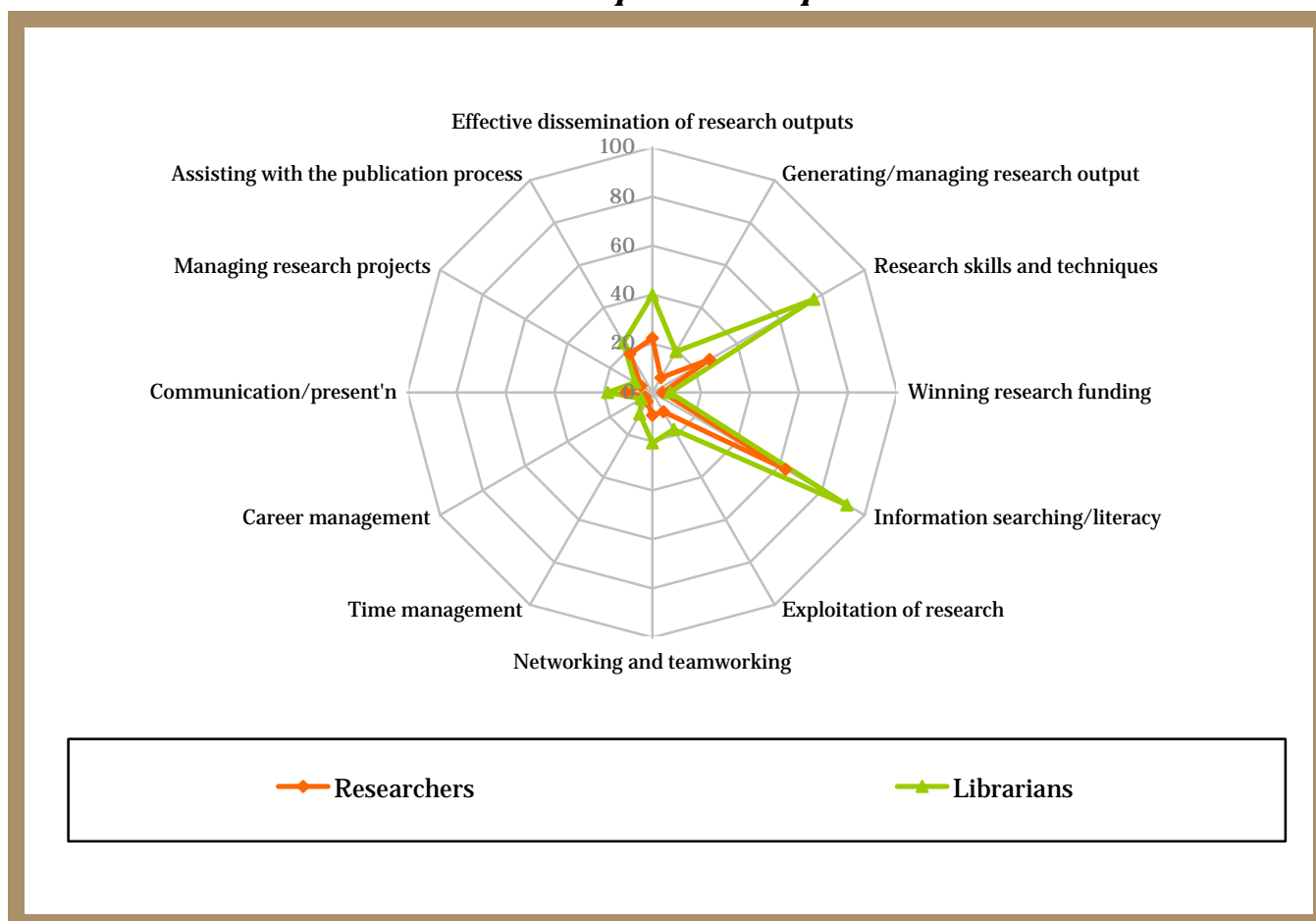
In Figure 30, the "possibly" and "don't know" answers have been excluded, so the focus is upon those with unambiguous views one way or the other. The patterns of responses for researchers and librarians share the same basic shapes even though the proportions differ somewhat. It appears that both groups are focusing upon the current strengths and known areas of expertise expected of library professionals. In general, neither researchers nor librarians themselves have much appetite for library staff to be involved in the delivery of coaching for career management, time management, networking and team working, exploitation of results, generating and managing research output, winning research funding or managing research projects.

Librarians see themselves as teaching the skills traditionally associated with librarians, notably information searching and literacy, along with research skills and techniques. But there are in addition some indications both from the survey and from our focus groups that a small core of librarians would like to be involved with teaching in subjects not traditionally associated with libraries, such as the effective dissemination of research outputs, networking and team working, exploitation of research, and generating and managing research output.

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<sup>26</sup> It is of note that we have heard this before, in the context of a study on the provision of electronic theses in UK universities: in that case, supervisors were reported frequently to have misunderstood the concept and its implications and were invoking the 'supervisor knows best' rule to at some times thwart attempts by the library or graduate school to develop policies that would ensure e-thesis provision for the institution (see <http://www.keyperspectives.co.uk/openaccessarchive/reports/EThOS%20Report%20-%20final%20published%20version.pdf> )

**Figure 30: Percentage of researchers and librarians who believe library staff should have a role to play in teaching and developing researchers in various aspects of academic and professional practice.**



### 8.8 Virtual Research Environments (VREs) and Virtual Research Communities (VRCs)

Virtual Research Environments (VREs) are being developed to provide frameworks of resources to support the underlying processes of research in Virtual Research Communities (VRCs) and as such are populated with applications, services and resources appropriate to the needs of different groups of researchers. As we note in Section 4.2, over 50% of researchers, and 75% of librarians, believe that VREs will be an important driver of change in libraries; and as we discussed in Sections 8.2 and 8.3, significant numbers of researchers and librarians believe that libraries should have a role in the future in creating and managing VREs. But our survey also showed that 50.5% of researchers have never heard of VREs, and 31% have heard of them but know little about them. A small proportion of researchers (13%) say they know something about VREs but have no direct experience of using one. Just a very few researchers have actual experience of VREs: 1% are involved with developing and testing VREs; and 2% report that they regularly use a VRE.

Although there are now some project-level VRCs in the UK, none of the researchers we spoke to personally are involved in them, and the librarians we consulted have not yet had much direct experience in this area. At one institution crystallography researchers have established a VRC themselves, bypassing the library in the process. Other librarians commented that different

departments or research groups in their institution were actively discussing the issue. Examples given were geography, linguistics and other social sciences. So far, it seems that such developments have not had *much* impact on libraries except for early discussions about the issue of curating data. Researchers are aware that the data they are creating are vulnerable, but for the time being they seem content to live with this threat. For libraries, there is still uncertainty as to their role in this area, with big implications for resourcing and staff development.

### *8.9 Issues around collections development*

A number of issues relating to collections development were raised during our interviews and focus groups with librarians and we report on them here briefly for completeness.

First, with respect to journals, especially in the sciences, some librarians believe that Big Deals have induced a sense of complacency in the research community, which is largely blind to the problems such deals bring to libraries. The sense of wellbeing has been reinforced in institutions where there are duplicate copies of journals in departments or research groups as a result of direct marketing by publishers to individuals.

Second, many members of the UK library community are considering replacing journal subscriptions with pay-per-view. This will not occur in a wholesale way except in smaller, more specialised libraries (some of which have already moved down that path); but it may offer a way for librarians to achieve better value for money in some cases. And the more specialised the resource, the more sense this makes.

Third, there is interest in collaborative collection development – cooperation between libraries in a region or associated in some other way to pool resources to develop a shared collection that is better than any of them could manage alone. The RIN and CURL are jointly funding a post to investigate ways to develop such cooperation. As we noted in Section 3, however, whilst the logic of such schemes is obvious, and whilst they can work well, there is also a downside, since collections are usually developed around significant research strengths within an institution. If a prominent researcher or research group moves away from the institution, bringing to an end the research in that particular field, that part of a collection is no longer needed by the library. Any collaborative collection agreements, however, might require it to continue to fund the purchase of materials in that area, a commitment that does not fit with the new goals of the institution. The fear of this is a real constraint on progress in developing collaborative agreements.

Finally, there is the alternative scenario that arises when researchers move from one institution to another and the specialised collections that have been developed around their research interests move with them. Usually, this is effected smoothly, and sometimes – though by no means always – a cash transfer takes place. But however smooth the process there are often unanticipated resource implications for the libraries both institutions.

### **Key Points**

- Researchers and librarians agree that a key role for libraries in the future will be as custodians and managers of digital resources
- Researchers and librarians agree that increased library input into planning and executing research is unlikely; and researchers do not expect a high level of library input into the issue of research dissemination
- Librarians believe that providing expert advice and teaching on information literacy and management is a core role for libraries; while many researchers agree with them, there are challenges for libraries in securing significant take-up and penetration of their advice and expertise
- There are some significant differences in researchers' and librarians' views of the future role of libraries in supporting research, and there is a need for dialogue between them to ensure that library services and expertise are developed and deployed in the most effective way
- Collaboration and multi-institutional developments will continue to grow in areas including Virtual Research Environments, and libraries are likely to be involved in many such developments; but they will generate new demands in resourcing and skill sets, and new issues of co-operation and trust between institutions

## 9 Visibility, sharing, openness

### 9.1 Introduction

One of the biggest challenges for libraries is to increase the visibility and usage of their materials. Researchers understand that material of interest to them may well exist, but they have no simple way to discover and access it. Many of them, during the course of the discussions for this study, commented that institutional and departmental libraries hold real treasures but that these can remain hidden if finding aids cannot help potential users to discover their existence. In this chapter, we discuss the measures being taken to optimise visibility, access and usage of research materials, and in particular, awareness of and attitudes towards open access.

### 9.2 Digitising archives and special collections

There is extensive work going on in libraries to digitise archival or special collection material and the feedback from researchers is very positive. Indeed, we heard from the researchers themselves that they very much value this provision. Librarians say that they would like to do more, but that resourcing the effort is costly. Moreover, digitisation is but part of the task: making digitised as well as printed materials discoverable requires the creation of good metadata. This part of the process needs skilled cataloguers, with the resource implications that this requirement brings.

Despite the cost of its creation, the importance of good metadata cannot be overemphasised. Without it, digitisation may as well not have taken place. The same applies to non-digitised material: if it is not adequately described in a digital library catalogue then it will be discovered and used only by the most tenacious and diligent of researchers. Building up special collections is costly and acquiring the material is but part of the cost. Cataloguing adds much to the total.

In the survey we asked researchers about their views and usage of digital archival or special collection material. Nearly 40% of researchers find digitised archives to be “very useful” (19%) or “useful” (20%). The view from librarians, however, is that such archives are not particularly well used by researchers: the biggest group of librarians (33%) say the use of digitised archives is “moderate”; only a small minority say they receive “very heavy” (4%) or “heavy” (10.5%) use. And significant numbers report use as being “light” (19%) or “very light” (9%).

Digitised special collections are used by nearly one third of researchers: 15% characterise them as being “very useful” and an additional 15% say they are “useful”. These overall figures mask significant disciplinary-based differences. Only 9% of life scientists and 13% of physical science researchers regard digitised special collections as being “very useful”, but the proportions for social scientists and arts and humanities researchers are 27% and 30% respectively.

As with digitised archives, with digitised special collections there is a gap between the proportions of researchers who perceive these resources to be useful, and the degree to which librarians believe these resources are being used. Only 4% of librarians think digitised special collections are getting “very heavy use” and just 9.5% believe they are attracting “heavy use”. Most librarians think use is “moderate” (32%), “light” (20%) or “very light” (9%). An additional 19% don't offer this type of resource in their library. Given the nature of special collections, however, these levels of usage are much in line with librarians' expectations. By definition, special collections are not a resource for the majority and

the absolute level of usage is not a critical indicator of their importance. Nonetheless, it is satisfying for librarians that the collections are used by some, from time to time, justifying the work that goes into their creation and curation.

### 9.3 *The print reserve collection*

Print reserve collections were raised in our discussions with librarians. Discussions centred around whether there might be a business case for a service at national level to ensure the preservation of an appropriate number of print copies of material that might otherwise be disposed of, to provide ready access to that material, and to secure efficiencies by releasing space in libraries that might otherwise keep printed materials “just in case”. The first phase of an initiative to test the case for such a service, the UK Research Reserve, is underway with six institutions participating alongside the British Library. This first phase focuses on runs of low-use journals, and the six institutions have between them identified 17.3 shelf km of such material that might be disposed of. The British Library will provide the access and preservation service, and accept for its collection only those journals which it does not already hold. A future phase of this initiative may tackle low-use monographs, an issue raised by one or two researchers who questioned what policies were in place nationally on the disposal of such material.

### 9.4 *Open Access*

Open access to research findings is growing. The Directory of Open Access Journals ([www.doaj.org](http://www.doaj.org)) now lists some 2500 titles and there are around 900 open access repositories around the world. Research funders are introducing policies that ensure that results from the work they fund is openly accessible, and many anticipate that the contents of digital repositories will start to grow quickly as these policies begin to take effect. Despite all the activity and progress on open access over the past couple of years, however, researchers remain largely unaware of the issues and arguments, and this was reflected in the focus groups and other discussions we carried out for this study. Of the researchers we consulted, only about 1 in 10 were able to show that they fully understood what is meant by open access. We sought to find out what libraries are doing with respect to open access and how successful their efforts in informing researchers about the issues have been so far. It is far from easy. Some of the issues are difficult to explain. Moreover, researchers are both producers and users of research outputs, and libraries have to tackle both these roles in their open access awareness-raising activities. Librarians expressed the view that they need support and leadership from senior management in institutions to drive a cultural change and, above all, formulate institutional policies that enable the library to follow up with advocacy to make open access a norm for the institution's research community.

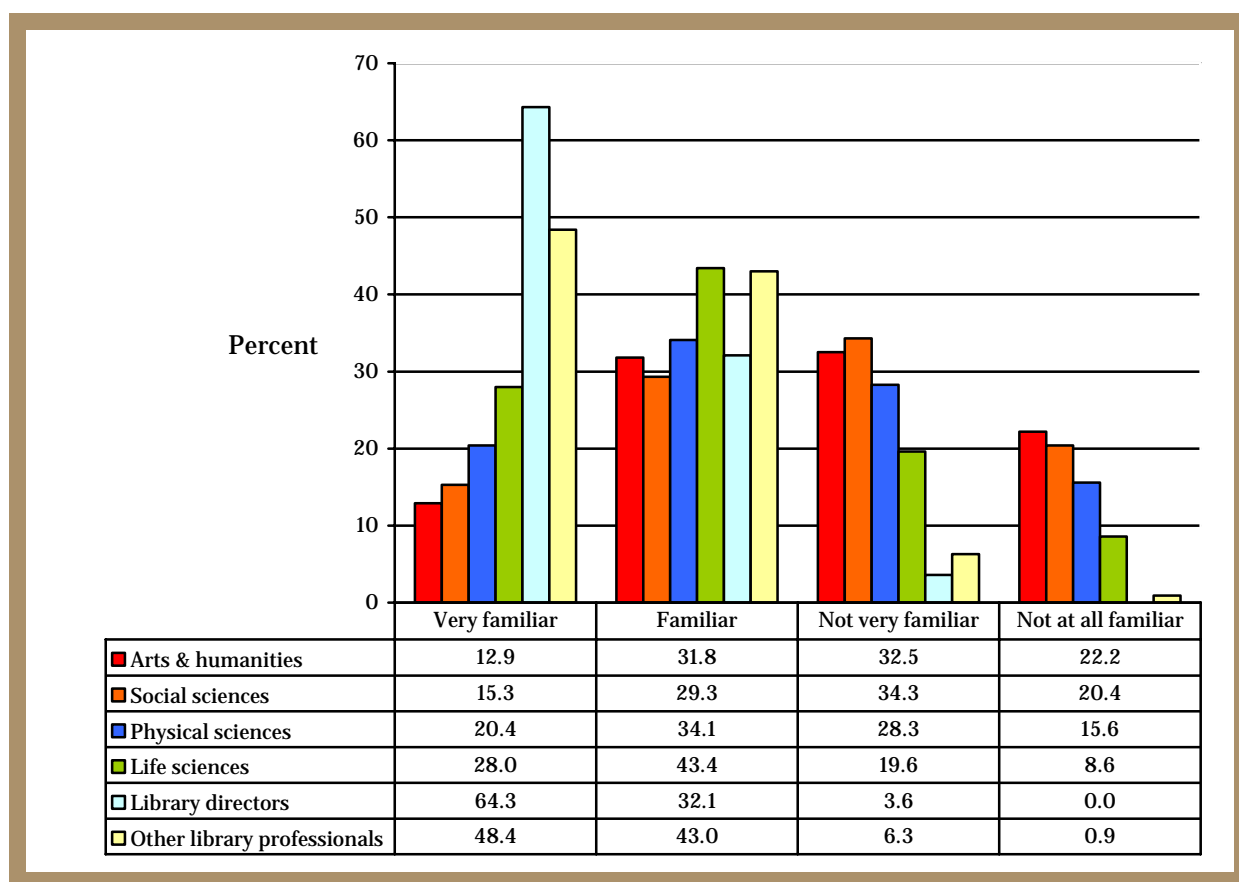
#### 9.4.1 *Familiarity with open access*

Researchers and librarians were asked about their familiarity with the concept of open access. The question was preceded by a short paragraph describing what is commonly understood by the term in order that the questions could be considered from a common starting point to provide consistency. The results are presented in Figure 31.

Distinct differences can be discerned along disciplinary lines. Relatively few researchers in the arts and humanities (13%) and social sciences (15%) are “very familiar” with open access, whereas for physical sciences (20%) and life sciences (28%) the proportions are greater. In contrast much greater proportions of librarians believe themselves to be “very familiar” with the concept: 64% of library directors and 48% of other library professionals are in this group. The proportions of researchers and librarians who rate themselves as being “familiar” rather than “very familiar” with the concept range from 29% to 43%, with life scientists again topping the researcher count.

Overall, the level of familiarity with the concept of open access (that is adding together the “very familiar” and “familiar” categories) ranges from 45% for arts and humanities researchers to 71% for life science researchers. Of course this means that many researchers are not very or not at all familiar with open access. Adding together the “not very familiar” and “not at all familiar” categories, 54.5% of arts and humanities researchers are unfamiliar with the concept as are 54% of social science researchers, 44% of physical science researchers and 29% of life scientists. By contrast librarians are very well informed on the subject: among library directors 96% are familiar with open access as are 91% of their librarian colleagues.

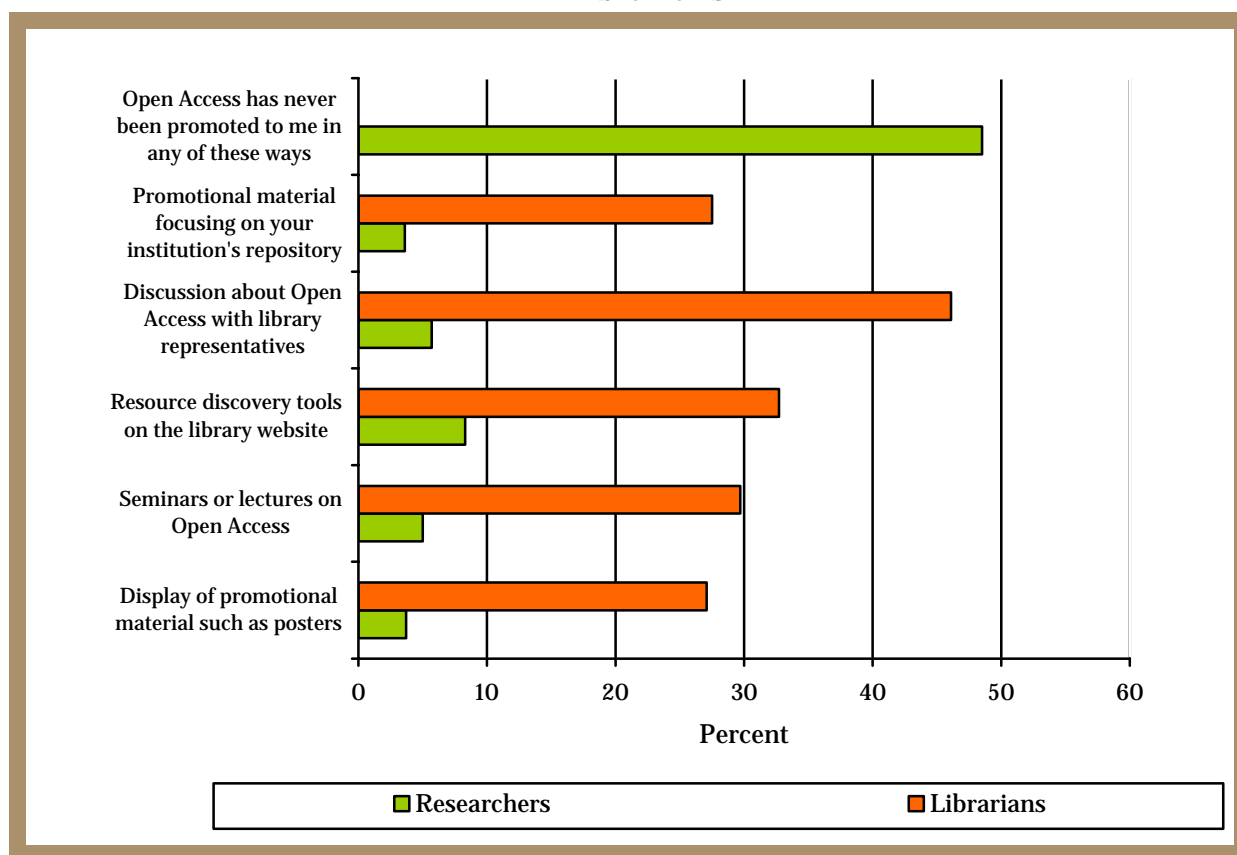
**Figure 31: The proportions of researchers and librarians who are familiar with the concept of open access**



We asked about what libraries have done so far to promote awareness of open access within their research communities. We asked researchers whether resources provided by their institution’s library had increased their understanding of open access. A list of six options was provided, and the results are presented in Figure 32. Alongside the researchers’ responses are figures for the proportions of librarians who reported that their library *had* made efforts to explain and promote open access to the research community using the methods listed.



**Figure 32: Communication about open access: the perspectives of researchers and librarians**



Nearly half of the researchers surveyed said that open access has never been promoted to them in any of the ways listed. This may mean either that librarians have not communicated with these particular researchers as yet, or that they have done so but researchers have not received the messages. As the results show, between 27% and 46% of librarians have made efforts to communicate with researchers using one or more of the methods listed but these efforts appear to have had only very limited impact. That said, it would seem that researchers are finding out about open access somehow – either through communications from the library or from other sources - since, as reported in section 8.3, 19% of them say they are “very familiar” with the concept and a further 33% say they are “familiar” with it.

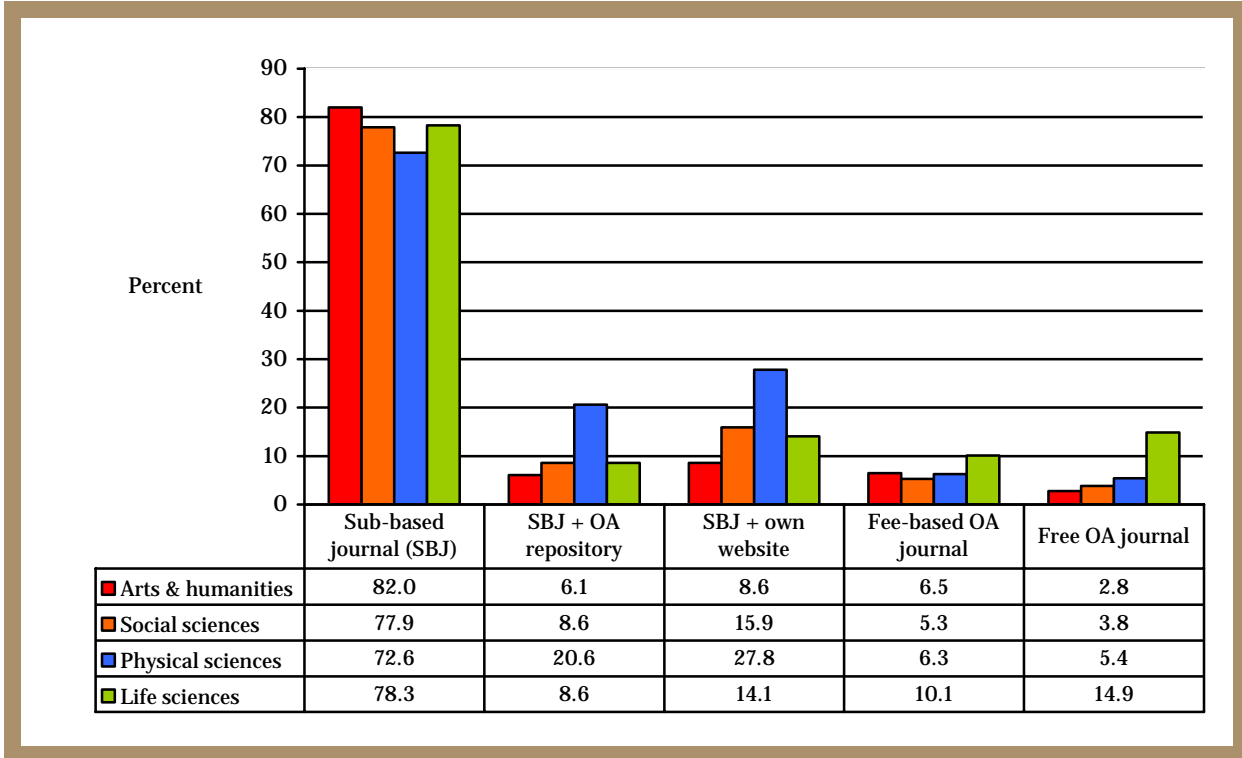
Even if they are familiar with the concept, researchers are much less familiar with how to make their own research output available on an open access basis; as is well-known, publishing in traditional subscription-based journals remains the most commonly used means of dissemination, and librarians appear to be having little influence on researchers’ publishing habits. Just 4% of researchers said a librarian had advised them to accompany publication in a subscription-based journal with deposit of a copy of the article in an open access repository; and only 1% of researchers said a librarian had advised them to publish in open access journals.

Figure 33 shows that more researchers in the physical and life sciences than their counterparts in the social sciences and the arts and humanities are using alternative or supplementary means of disseminating their work. Physical science researchers are relatively more likely than others to put copies of their published papers in open access repositories or on their own websites. Life science researchers are more likely than those in other disciplines to publish in open access journals, perhaps



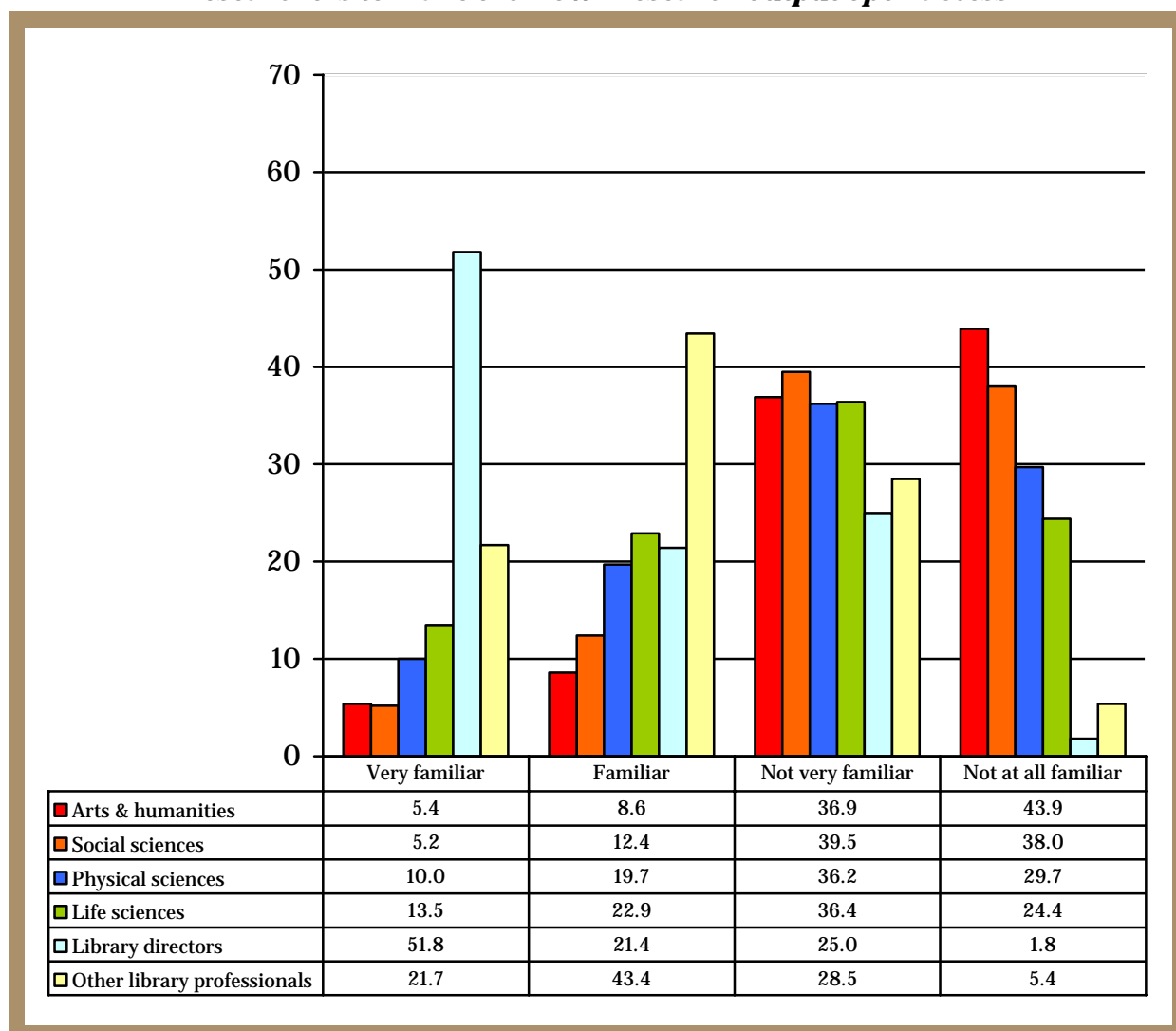
reflecting the number of open access journals in the life sciences. Nonetheless, the numbers of researchers in all disciplines currently taking advantage of open access outlets remain small.

**Figure 33: Percentages of researchers choosing to publish their articles in different types of journal**



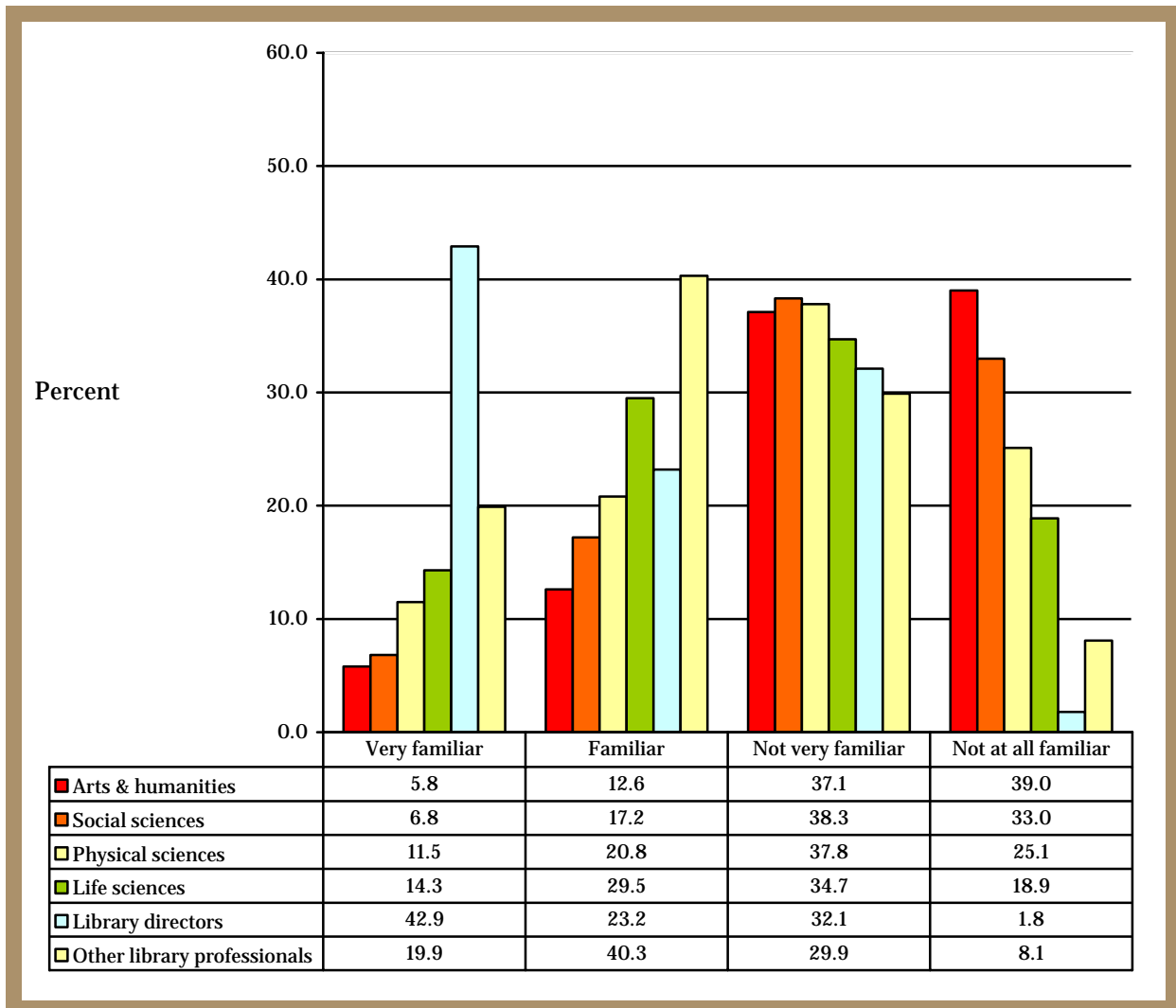
Those figures are explained partly by the low numbers of researchers who say they know how to contribute to the open access corpus. As Figure 34 shows, only 14% of arts and humanities researchers are familiar or very familiar with the options available to make their own outputs open access, and 81% are not. Similarly, while 17% of social science researchers know what their options are, 78% do not. Physical science researchers show greater familiarity: 30% know how to make their work open access, while 66% do not. Life science researchers again show the greatest familiarity: 36.5% know how to make their work open access while 60% do not. By far the greatest levels of familiarity are reported by librarians: 73% of library directors are familiar with how researchers can make their research outputs open access, as are 65% of their librarian colleagues.

**Figure 34: Researchers' and librarians' familiarity with options available to researchers to make their own research output open access**



Researchers and librarians were also asked about how familiar they are with methods for finding open access content. Overall the pattern of responses is similar to that described above, with life scientists again showing the greatest familiarity. Around three quarters of arts and humanities and social science researchers are unfamiliar with methods for finding open access content. The corresponding proportion for physical science researchers is two thirds, while a little over half of life science researchers are unfamiliar with ways of finding this type of content. Figure 35 also shows that librarians – particularly library directors – are familiar with methods for finding open access content, but a significant majority are not: 34% of library directors and 38% of other librarian professionals profess themselves unfamiliar with how to find open access content.

**Figure 35: Researchers' and librarians' familiarity with methods for finding open access content**

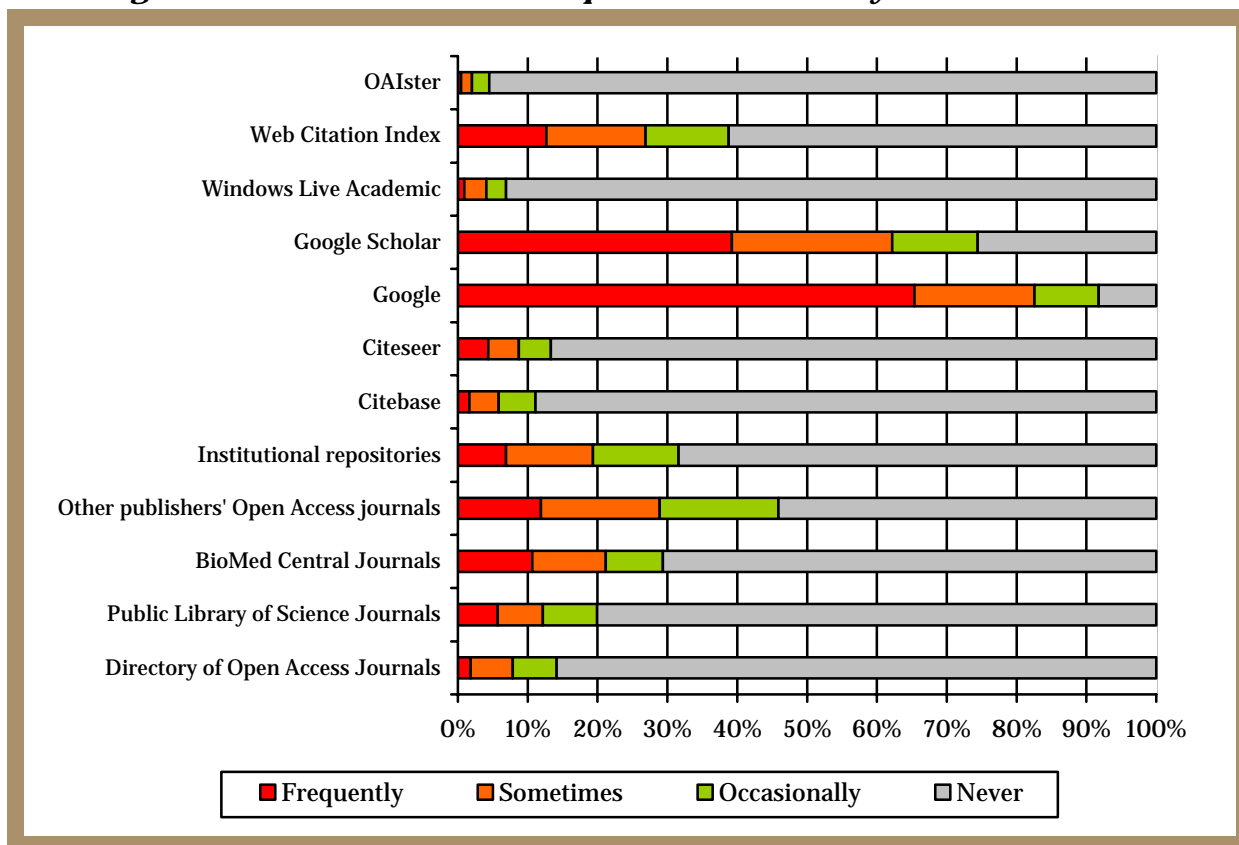


**9.4.2 Using open access discovery services and content to find and read information**

Overall, 29% of researchers say they are “very familiar” or “familiar” with methods for finding open access content. We also asked researchers to record how frequently – if at all – they use any of the most widely known open access discovery services and content to find and read information. The results are presented in Figure 367. It will come as no surprise to see that Google is used frequently by 61% of researchers, and Google Scholar by 35% (although a quarter of researchers never use Google Scholar). The well-established life science open access publishers appear at first sight to be used relatively infrequently. But the disaggregated results show that 18% of life science researchers use the Public Library of Science journals “frequently” and a further 14.5% use them “sometimes”; and that 35% of life science researchers use BioMed Central journals “frequently” and an additional 25% use them “sometimes”. 25% of all researchers use open access journals from a range of other publishers either “frequently” (10%) or “sometimes” (15%).

Of the researchers who have used any of the open access resources listed in Figure 36, 72% primarily use their own Web browser to access the resources, whereas the first choice for 11% of researchers is to access the resources via their institution’s library website.

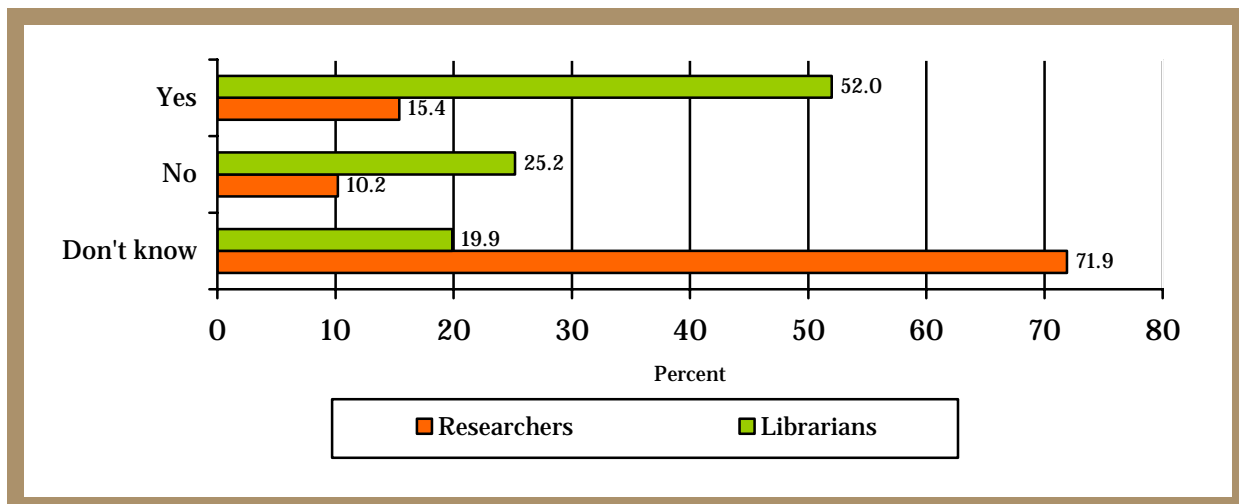
**Figure 36: Researchers' use of Open Access discovery services and content**



### 9.4.3 Institutional repositories

Our survey shows a significant discrepancy between the proportion of librarians who say their institution has an open access institutional repository (52%) and the proportion of researchers who believe that their institution has such a repository (15%). As Figure 37 shows, the gap is even greater between the 20% of librarians who say they don't know whether their institution has an open access institutional repository and the 72% of researchers who don't know. There are no significant differences in the responses for the four broad disciplinary groups of researchers.

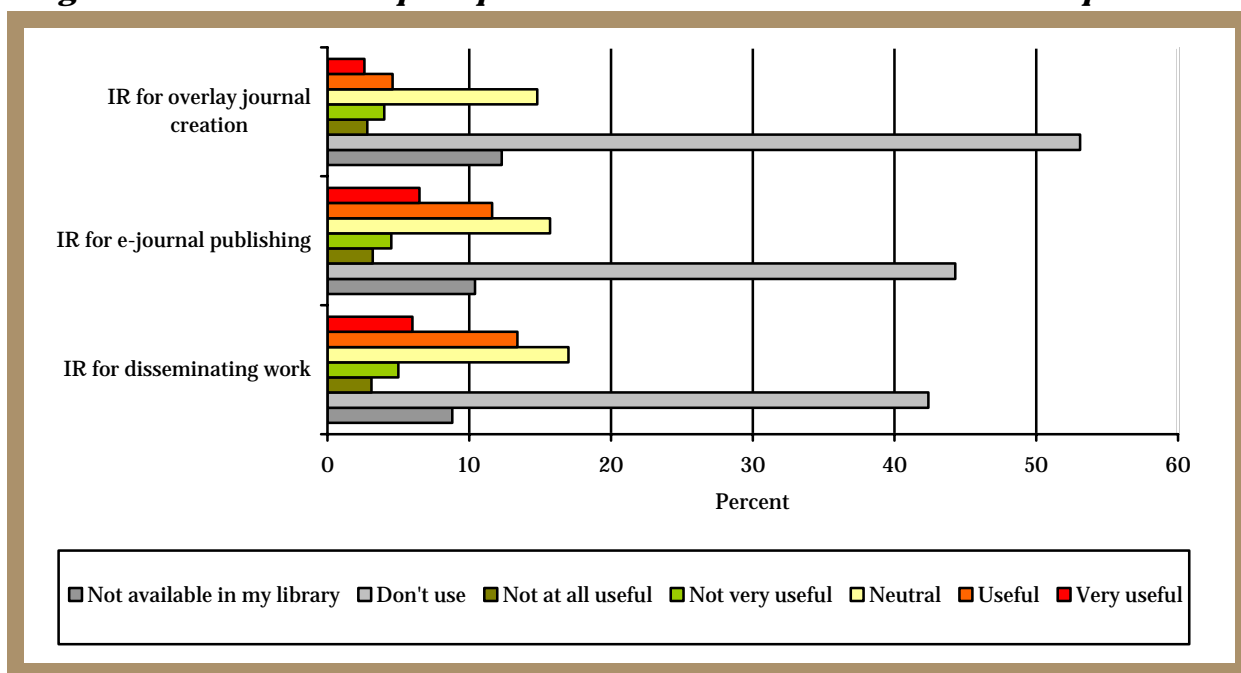
**Figure 37: Does your institution have an open access institutional repository?**



The management of institutional repositories is a role that librarians and researchers have indicated should be a core part of the portfolio of services offered by libraries. The results here should contribute towards providing a benchmark for current usage of institutional repositories. Overall 6% of researchers report using institutional repositories “frequently” to find and use information, a further 11% says they use them “sometimes” and 11% of researchers use them “occasionally”. At the moment 60% of researchers have never used an institutional repository to find information.

The survey sought to understand the main ways in which researchers use their own institutional repositories, but given the general lack of knowledge about whether their institution even has an open access repository the statistical base is rather small. Bearing that in mind, 2% of researchers search their own institution’s repository frequently, 4% search it occasionally, and 5% report that they do not specifically search their own institution’s repository, but instead search across all institutional repositories using a search engine such as Google. At present only a very small proportion of researchers deposit their articles in their institution’s repository: 0.5% say they deposit their best articles in it; 3% say they deposit most of their articles in it; and 3.5% say they deposit some of their articles. Overall 9% of researchers say they never search their institutions’ repository and 11% say they never deposit articles in it, but these figures should be treated with caution since it cannot be guaranteed that all respondents qualified themselves to answer these questions correctly by following the routing instructions. Nevertheless, the key message is that as yet very few researchers search or deposit articles in institutional repositories.

**Figure 38: Researchers' perceptions of the usefulness of institutional repositories**



The survey also provides evidence, however, that a slightly higher proportion of researchers perceive some usefulness in the roles institutional repositories can play in the dissemination process. As the results presented in Figure 38 indicate, nearly a fifth of researchers think that institutional repositories are either “very useful” or “useful” for e-journal publishing and for disseminating their work. By contrast, just 7% believe their use for the creation of “overlay” journals is either “very useful” (3%) or “useful” (4%). This probably reflects unfamiliarity with the concept of overlay journals. Librarians

report generally moderate to very light use of these means of utilising institutional repositories, mirroring the pattern of responses from researchers.

Turning to library policy, just 1.3% of librarians report that their institution has a policy requiring researchers to deposit their work in the institution's repository. This result was expected, since only two institutions in the UK had such a policy at the time the survey was conducted. Just 9% of librarians say that their institution has formal guidelines on what researchers should deposit and when, and 30% say that there is no institution-level encouragement for researchers to deposit their work. Almost a quarter (23%) of librarians say that their library or information services colleagues mediate all deposits to their institution's repository; a further 10% report that their library mediates most deposits; and 7% say that their library mediates a limited proportion. In 11% of cases librarians reported that their library is not at all involved.

Only a small fraction of the annual peer-reviewed published research output is deposited in institutional repositories. Just over one-fifth (21%) of librarians think that up to 10% of the institution's output is deposited, 5% believe that between 11% and 30% of the institution's output is deposited, and beyond this the figures are very small. These estimates by librarians are reasonably accurate: the global level of open access peer-reviewed research articles is about 10-15%, but not all of them are in repositories. Many are on authors' websites, thus bringing the global estimate of articles in open access repositories down to about 5-10%.

Our discussions with librarians revealed that whilst they were all in favour of open access they face practical problems in implementing it in their institutions and in achieving a reasonable level of involvement from researchers. Most reported that their library had established a repository and had carried out some advocacy work with the research community. Nevertheless, as has been shown from many previous studies, researchers do not spontaneously deposit their work in open access repositories in high numbers. This is because of the level of awareness is still low, because researchers are dissuaded by fears about copyright, and because they do not make this task a priority.

Librarians told us that in order to make more of a success of their open access schemes, they need two things: first, the explicit support of institutional senior management, to raise awareness of the importance of the issue and to formulate stronger policies on how it should be tackled; and second, that making research outputs open access should be as simple as possible. Their ideal, to encourage researchers to participate, would be a very simple process for depositing articles, with a 'few-clicks' procedure for entering accurate metadata. We note that repository software suppliers are working to simplify the deposit process as much as possible, and to find ways to ensure accuracy in the metadata: the newest version of EPrints, for example, has several places where drop-down lists appear after the first few letters of a field entry are typed (e.g. author's name or journal title).

## 9.5 *Knowledge transfer*

Open access is one way to ensure that knowledge created within the research community is available for all to use, but efforts are also made in other ways. Government and other research funders are giving priority to the transfer of knowledge to business and to the wider community; and significant levels of funding are being provided to support knowledge transfer and "third-leg" strategies. Libraries have a role to play in supporting such strategies, and engagement with local communities; but their role has not been widely supported or rigorously thought through. And there is a real danger that a paradoxical result of the move to electronic resources, available to researchers under institutional licence

agreements, will be to restrict the access people from outside the institution formerly had to content that was formerly available in academic libraries in printed form.

#### **Key Points**

- Libraries have made significant efforts to optimise the visibility and usage of their archival or special collection material through digitisation programmes. Feedback from researchers is positive, but many information resources that could be useful to researchers remain under-used.
- Researchers' awareness of new developments in scholarly communications, including open access, is still low.
- Further progress in realising the potential of open access to optimise access to research outputs will require effective interaction between researchers, libraries and senior management at institutional and national level.

## 10 Getting along, getting on: library-research community relations and the future promotion of library services

### 10.1 Introduction

The first comment made in the first librarians' focus group for this study was "It's hard to serve researchers properly because it's almost impossible to find out what they want". This was repeated in other sessions, accompanied by discussion of possible remedies and sticking-plaster solutions. Liaison with the research community presents a number of difficulties for libraries, because of researchers' independence, the transience of many individual relationships, the increasing tendency for researchers to use library services remotely. It was said that while the teaching community regards the library as a partner, the research community tends to 'do things by itself'. The communities are of course largely one and the same, but the differences in behaviour of academics when they are in teaching or research modes are significant for library professionals trying to align their services with researchers' needs.

### 10.2 Channels of communication

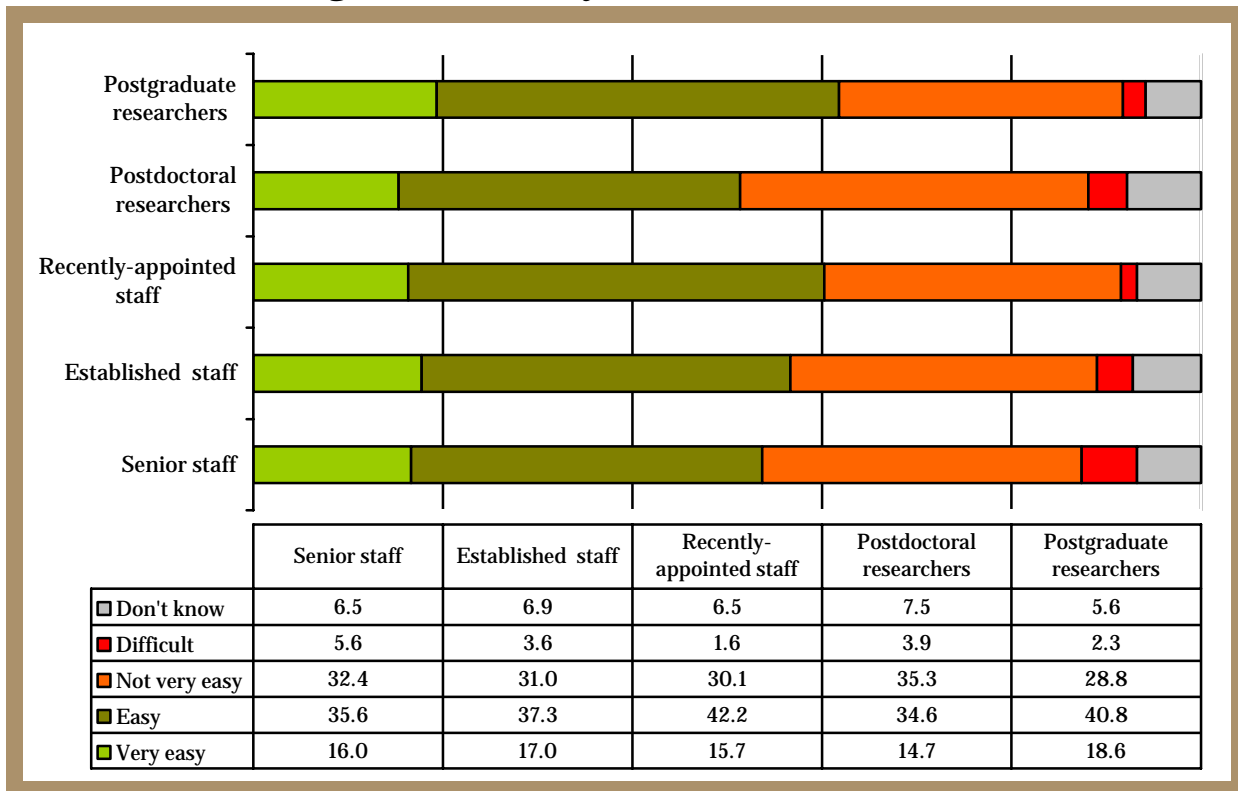
In order for librarians to understand what information resources, services and facilities researchers need to do their work effectively, there need to be good levels of communication. In this context librarians were asked: "How easy is it for your library to liaise with the following types of researcher in your institution?" An explanation was offered to help to ensure that the question was addressed in a consistent fashion: "*liaise*...refers to meaningful communication in terms of discovering researchers needs and obtaining feedback on library-related activities".

The responses presented in Figure 39 indicate that most librarians find it easy to liaise with the researchers in their institution. Although it appears slightly easier to liaise with postgraduate researchers and slightly more difficult to liaise with postdoctoral researchers, in general there are no major differences attributable to researchers' career stage. Overall around a third of librarians do not find it easy, and a few actually find it difficult; but it seems that two-thirds find it relatively straightforward to engage in meaningful interaction with their institutions' research communities.

These levels of liaison do not, however, imply that communication on particular topics is wholly effective, as is shown, for instance, in libraries' communication about open access as discussed in Section 9. That is just one example of a more general communications problem. One of the most frequently-raised topics in the focus group and discussions, by both researchers and librarians, was that of communication between the research community and the library. Researchers claimed that they rarely saw their subject librarian unless they went to the library to find them. Librarians said that they 'must always' reach out to the research community and that communication is 'never' the other way. Allowing for some hyperbole, it is clear that both parties find it difficult to effect satisfactory communications, and it is also clear from the focus groups and interviews that *both parties want very much to do this*. It is very much in the interests of both that they should do so.



**Figure 39: Is it easy to liaise with researchers?**



An additional perspective on library-research communication can be gleaned from researchers' responses, discussed in Section 4, on the extent to which they feel able to influence library strategy. Only 6% say they "strongly agree" and 30% "agree" with the proposition that they are able to do so. Moreover, 21% "disagreed" and 9% "disagreed strongly". In summary, 36% of researchers think they are able to influence library strategy; 30% take the opposite view.

Whilst there is some agreement on the fact that communication is a problem, the parties still have somewhat different perceptions of the communication issue and different levels of awareness of it. It is a critical factor in the future success of library service provision and measures that improve the likelihood of a 'meeting of minds' on the issue will be important.

### 10.3 New ways of communicating by researchers

There is an array of new technologies available to researchers now for communicating amongst themselves and to other constituencies: wikis, blogs and social networking are now becoming commonplace. In most cases, libraries report that researchers' use of such technologies is not impinging on the library, even though there might be ways in which libraries could help, providing the environment within which to deploy the technologies, and offering server space and expertise. Librarians do feel that the library may be the place for formally curating the output of wikis and blogs, but as yet it seems that researchers have not made the connection: perhaps because they see these technologies as transient and ephemeral.

In other cases the library has been involved in exploring the potential of new technologies. Some researchers are podcasting lectures to students, and in at least one instance this has been mediated by the library, generating such interest across campus that it is reported that researchers are heading into

the library to ask what else might be possible. This may be a sign of things to come, with potential for the research community and libraries to work together to exploit the possibilities for the future.

### 10.4 *Branding the library*

The concept of branding the library was raised at a focus group, in the context of discussions about the library-researcher relationship, and we pursued it in the survey. Researchers often say they do not use their library, though of course they do use its services and the gap between the library building(s) and the library's services that nowadays pervade the whole campus and beyond brings with it a branding problem. The library has much less identity in researchers' minds nowadays than it did when researchers had to visit it regularly in person.

There appears to be a lack of connection, which can be quite marked, between what is provided for scholars by the library and their recognition of it. Librarians told us that there is often a low recognition of the fact that *the library* has purchased content and services that researchers use from their desktops. Researchers often see these things as being provided somehow centrally by their institution rather than originating from the library. We observed that this often goes hand-in-hand with a lack of understanding about the nature of specific library services. For example, when we asked researchers about where they find information relevant to their work, they not uncommonly answered 'in ATHENS'. They related the ATHENS access and authentication system used in UK university libraries to an information provider. It is thus important to note that while researchers are generally very satisfied with what their libraries provide, many lack any clear understanding of what the library is actually doing on their behalf. This may have a significant impact when libraries seek support for developing their services and their role in the institution. It points once more to the need to improve communication and dialogue between researchers and libraries.

#### **Key Points**

- There are significant differences of perceptions and views between researchers and librarians, and differences in awareness of key issues. They agree that communication channels need to be improved. How most effectively to achieve that is a major challenge.
- The research community – in the widest sense – is using social networking technologies to exchange and share research-based information. The role of libraries in these developments is at present ill-defined.
- Researchers may not readily recognize that the content they receive on their desktop is provided through the library, or be aware of the administrative overheads involved. This presents a branding and marketing challenge for libraries.